Psychometric properties of the Norwegian self-efficacy for managing interpersonal events (N-SEMIE)

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Abstract

Background: The Intentional Relationship Model addresses the use of different therapeutic approaches according to client needs, but also the therapist’s need to manage the relational challenges that inevitably arise in therapeutic encounters. However, measures of therapist self-efficacy related to managing such challenges have not been previously developed.

Aim: This study aimed to examine the psychometric properties of a new measure, the Norwegian self-efficacy for managing interpersonal events (N-SEMIE).

Methods: Occupational therapy students (n = 106) completed the instrument along with sociodemographic information. Factor analysis was performed using Principal Components Analysis in combination with Parallel Analysis, and internal consistency was assessed with Cronbach’s α and inter-item correlations.

Results: All scale items belonged to the same latent factor (factor loadings 0.72-0.84), and Cronbach’s α was 0.94 (mean inter-item correlation 0.60) for the scale items.

Conclusion: The N-SEMIE scale is unidimensional; the items have very high internal consistency; and the scale may be useful in research and audits related to therapist management of the interpersonal aspects of occupational therapy practice.

Keywords: factor analysis, higher education, intentional relationship model, psychometrics, reliability, self-efficacy, students
Introduction

Occupational therapy practice is largely performed within the context of an immediate relationship to a client. The profession’s knowledge concerned with therapist self-awareness and skills by which to manage interpersonal challenges builds on numerous sources from other disciplines, psychology in particular (Gargi, 2004; MacDevitt, 1987; Taylor, 2008a; Williams, Hurley, O’Brien, & DeGregorio, 2003; Yazdani, 2014). Bandura also demonstrated a link between the beliefs people have about their own skilled performance and their motivation for action (Bandura, 1997). He claimed that unless people believe they can produce desired effects by their actions, they have little incentive to act. Therefore, efficacy beliefs are prerequisites of action, and people guide their lives by their beliefs of personal efficacy.

Self-efficacy makes a difference for how people feel, think and act (Bandura, 1997). In the context of occupational therapy education and practice, students and therapists need to develop self-efficacy for the tasks they are required to perform as practitioners. The therapeutic use of self is one of the fundamentals of occupational therapy practice (Kielhofner, 2009; Taylor, 2008a). According to Taylor’s (2008a) Intentional Relationship Model (IRM), a model which has also been introduced to the German-speaking readership (Taylor, 2008b), skills in establishing, maintaining, and remediating the therapeutic relationship is essential for occupational therapy interventions to be successful. Therapeutic relationships are improved by the therapist’s appropriate responding to the events of the unfolding relationship process. However, if interpersonal events are not managed successfully, the relationship may be threatened, as may the outcomes of therapy itself. In light of this, occupational therapists and students need to have an understanding of the interpersonal challenges frequently experienced in practice, and need to develop a capacity and corresponding self-efficacy beliefs for managing them. In order to be able to monitor
and assess self-efficacy for managing the interpersonal events of occupational therapy practice, assessment tools are needed.

Evidence supports that self-efficacy tools can be used as a reflective means to develop awareness about one’s perceived capacity to perform particular types of behaviors (Bandura, 2006). A well-structured self-efficacy tool can help students and educators identify the strengths and limitations in the students’ perceived capability. Through this process, collaborative goals can be set out for the students to work on, and working towards specific goals has been found to motivate students for learning and, as a result, improve students’ learning outcomes (Kitching, Cassidy, Eachus, & Hogg, 2011).

In line with Bandura (2006), self-efficacy assessment tools are largely constructed to measure self-efficacy for a specific behavior, or for a variety of behaviors within a specific domain. Building on the same principle, the assessment tool examined in this study purports to measure occupational therapists’ self-efficacy for managing interpersonal events of therapy. According to Taylor (2008a), 11 types of interpersonal events are of particular importance: 1) expression of strong emotion, 2) intimate self-disclosures, 3) power dilemmas, 4) non-verbal cues, 5) crisis points, 6) resistance and reluctance, 7) boundary testing, 8) empathic breaks, 9) emotionally charged tasks and situations, 10) limitations of therapy, 11) contextual inconsistencies.

Prior studies of occupational therapists (Carstensen & Bonsaksen, 2016) and occupational therapy students (Bonsaksen, 2013; Yazdani, Carstensen, & Bonsaksen, 2017) have focused on their preferences for using different therapeutic modes, and on factors associated with such preferences. Recently, a questionnaire for assessing self-efficacy for therapeutic mode use was examined (Bonsaksen & Carstensen, 2017), and it was found all six items (representing each of the six therapeutic modes) constructed a one-component scale. To date, however, tools for assessing self-efficacy for managing the interpersonal events
occurring in occupational therapy practice are lacking. Producing such a tool with good psychometric properties may enable occupational therapy educators to monitor their students’ development in this important area of therapeutic practice, and possibly to intervene with individual students or groups of students at risk of a poorer development. Moreover, it will enable researchers to identify characteristics of students who may need extra guidance in this area. Ultimately, educational intervention research may use the resulting tools as outcome measures to assess the efficacy of the intervention. Given that the IRM is already introduced in the German-speaking countries (Taylor, 2008b), adding to the portfolio of relevant assessment tools may assist in using the model to improve occupational therapy practice, education and research in this region.

**Study aim**

The aim of the study was to establish the factor structure of a scale purporting to measure self-efficacy for managing interpersonal events potentially encountered in client-therapist relationships. In addition, the aim was to establish estimates of reliability (internal consistency) related to the resulting factors, and to assess the response format of the questionnaire items.

**Methods**

**Design and settings of the study**

The study had a cross-sectional design. The occupational therapy education programs in Oslo and Trondheim, where the study was conducted, are both undergraduate three years full time programs.

**IRM workshops**

Workshops on the IRM were conducted in the classroom with the students from each of the universities, both of which consisting of students in their second year of study. The first and
last author conducted the workshops. Due to differences between the study programs, the IRM workshop with the students in Oslo had three hours duration, while the workshop with the students in Trondheim had six hours duration. The contents of two workshops had similarities as well as differences. Both workshops included a theoretical introduction to the IRM model and its main concepts, teacher demonstrations, student role plays using the therapeutic modes, and a concluding plenary discussion. The role plays provided the students with the opportunity to practice each of the modes, and to receive feedback on their using them. The discussions centered on identifying the mode or modes used, the interpersonal events occurring, and ideas about how – and why – the therapist might take another relational approach in the situation.

**Participant recruitment and data collection**

The convenience sample of students were included as participants in the study based on their 1) enrolment in one of the involved occupational therapy education programs; and their 2) provided informed consent to participate in the study. The N-SEMIE questionnaire (see below for description) was distributed to the students during breaks in classrooms approximately two weeks after the IRM workshops in the autumn of 2016. The first and last author recruited the participants and distributed the questionnaires. At the time of the workshops and the first time of data collection, the participants were all undergoing an “Occupational therapy in mental health” study module.

**Measures**

The Norwegian version of the instrument investigated in this study represents Part III of the original instrument *self-efficacy for therapeutic use of self* as developed by Yazdani and Tune (2016) in the United Kingdom. The Part III scale, *self-efficacy for managing interpersonal events* (N-SEMIE), asks respondents to indicate their level of confidence that they have the required skills needed for managing a variety of challenging interpersonal events in clinical
practice. In the model, eleven different types of interpersonal events that might occur are described, relating to: expression of strong emotion, intimate self-disclosures, power dilemmas, non-verbal cues, crisis points, resistance and reluctance, boundary testing, empathic breaks, emotionally charged therapy tasks and situations, limitations of therapy, and contextual inconsistencies. For all items on the scale, respondents are asked to rate their level of confidence that they can manage the event on a 1-10 scale, 1 indicating the lowest possible level of confidence and 10 indicating the highest possible level. The psychometric properties of the original instrument has not yet been examined.

The Norwegian version of the instrument was translated by the first author and back-translated into English by a person proficient in Norwegian and in English. Subsequently, the instrument developer checked the content of the back-translated version for correctness and conceptual clarity by comparing it with the original version. No further amendments were required after the back-translated version had been checked. In addition to the scale, information regarding the participants’ age and gender were collected.

Data analysis

The data were entered into the computer program IBM SPSS version 24 (IBM Corporation, 2016). Descriptive analyses were performed on all employed variables using means (M), standard deviations (SD), frequencies and percentages. The response format of the questionnaire items (i.e., the 1-10 rating scale) was analyzed by assessing the distribution of scores on each item (score range). Group differences were analyzed with independent t-tests and \( \chi^2 \)-tests as appropriate.

When assessing latent factors in the proposed scale, Principal Component Analyses (PCA) was performed. The Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy (Kaiser, 1974) and Bartlett’s Test of Sphericity (Bartlett, 1954) were used to assess whether the data were adequate for factorization. KMO values should exceed 0.60 in order to proceed
with factorization (Cerny & Kaiser, 1977; Kaiser, 1974). Extraction of factors was
determined by visual inspection of the scree-plots, and by assessing the Eigenvalue ($\lambda$)
estimates and the variance explained by the factors. According to statistical convention, we
retained factors with $\lambda > 1$ and/or factors explaining more than 10% the variables’ variance
proportions. In addition, Parallel Analysis was used in order not to overestimate the number
of factors to extract (Horn, 1965) – the Parallel Analysis is known to be more restrictive with
a view to factor extraction (Zwick & Velicer, 1986). It suggests that one should retain factors
with an actual $\lambda$ exceeding the randomly generated $\lambda$ of the corresponding factor in a random
dataset with the same number of variables and respondents.

An exploratory approach to the PCA was used. In addition to the $\lambda$ estimates, the
statistical measures reported from the factor analyses include communalities, indicating the
variance proportion of each variable explained by the factors together, and factor loadings as
estimates of the impact from a given variable on each factor. Factor loadings > 0.40 were
considered high. The reliability (internal consistency) of the resulting scales was examined
with Cronbach’s coefficient $\alpha$, and $\alpha > 0.70$ was considered satisfactory. Statistical
significance for all analyses was set at $p < 0.05$.

**Ethics**

Approval to conduct the study was obtained from the Norwegian Data Protection Official for
Research (project number 49433). The students were informed that completion of the
questionnaires was voluntary, that their responses would be kept confidential, and that there
would be no negative consequences from opting not to participate in the study. Written
informed consent was provided from all participants.

**Results**

**Sample characteristics**
Psychometric properties of the N-SEMIE

The participant characteristics are displayed in Table 1. One hundred and eleven students from Oslo and Trondheim provided data for the project, but five participants were removed from the analyses due to missing responses. Thus, the participants in this study were 106 occupational therapy students from the second study year in the Oslo \((n = 45)\) and Trondheim \((n = 61)\) education programs, respectively. The mean age of the students from Oslo was 26.1 years \((SD = 7.7 \text{ years})\), whereas the students from Trondheim had a mean age of 22.9 years \((SD = 3.4 \text{ years}, p < 0.01)\). There was a predominance of female students within the subsamples from both universities \((\text{Oslo } n = 35, 77.8 \%, \text{ Trondheim } n = 48, 78.7 \%, \text{ ns.})\).

[TABLE 1 ABOUT HERE]

The N-SEMIE: Scores distribution, factor structure and internal consistency

For the 11 N-SEMIE items, mean scores ranged from 5.42 (power dilemmas) to 6.51 (intimate self-disclosures), and the mean score range for the items was 7.5. The actual score range for the sum score of the items was 32-107 (possible score range: 11-110). Table 2 provides details about the score distribution on the N-SEMIE scale items.

[TABLE 2 ABOUT HERE]

The correlations between the items included in the scale varied between 0.43 and 0.74. The KMO value was 0.91 and Bartlett’s test of sphericity was statistically significant \((p < 0.001)\), indicating a dataset appropriate for factor analysis. One factor had Eigenvalue > 1: Factor 1 \(\lambda = 6.98\), explaining 63.5 \% of the data variance. A second potential factor had \(\lambda = 0.88\), explaining 8.01 \% of the data variance, and therefore this factor was not extracted. The Parallel Analysis also suggested a one-factor solution, as the Eigenvalue estimate of Factor 1
was the only estimate higher than the corresponding random estimate derived from the Parallel Analysis ($\lambda = 1.55$). After the extraction of one factor, the items’ communalities were between 0.52 (strong emotions) and 0.71 (crisis points). Table 3 shows the results for the one-factor solution resulting from the PCA, with factor loadings sorted by size. All items loaded strongly on the factor (0.72-0.84), and the internal consistency of the items was Cronbach’s $\alpha = 0.94$ (mean inter-item correlation 0.60).

[TABLE 3 ABOUT HERE]

Discussion

Scores distribution

The scores distribution reported for the N-SEMIE (see Table 2) showed that all the higher-level response options were used for all items, whereas the lowest response option was the only response that was never used for any of the items. However, given that nine of the 10 possible scores were used for most items, it appears that the 1-10 response format scale is appropriate for assessing self-efficacy for managing interpersonal events of therapy.

The participants’ N-SEMIE scores were expected to be higher rather than lower, in general. As the participants were second year students and had recently participated in an IRM workshop, they were expected to have developed some self-efficacy for managing interpersonal challenges in therapy. To an extent, the scores distribution with higher scores being more frequently used may also reflect the distribution often seen for scales assessing socially desirable assets (Bowling, 2009). Self-efficacy for managing interpersonal events occurring in therapy may be one such desirable asset that students of occupational therapy would tend to rate highly. Taking the educational context of the study into account, it may
also be that the participants would feel uncomfortable if they were to provide low scores on these items.

After inspecting the scores distribution, we consider the 1-10 score response format to be appropriate for measuring the students’ self-efficacy for managing interpersonal events of therapy. However, higher scores were more frequently endorsed than lower scores. In educational practice as well as in occupational therapy supervision, it would be possible to use the scale scores as a starting point for an in-depth discussion where each of the items could be explored with more nuance. What seems easy when completing a questionnaire may not be so easy when the questionnaire content is explicated in purely practical terms. On a related note, the same line of reasoning has been employed previously. As students provided high scores on the Norwegian version of the self-efficacy for therapeutic mode use (N-SETMU; Bonsaksen & Carstensen, 2017), we wondered if this could be owing to the more abstract language used for expressing the modes (and therefore, easier to score at a high level), compared to the practical interactions these concepts refer to. However, the N-SETMU scores were strongly correlated ($r$ ranging 0.60-0.79) with the corresponding set of concrete actions exemplifying each of the modes (Ritter, Thørrisen, Yazdani, & Bonsaksen, 2017). Thus, it may be that the students’ N-SEMIE scores reflect well their self-efficacy for managing actual interpersonal challenges in concrete practice situations.

**Psychometric properties of the N-SEMIE**

According to Bandura (2006), item analysis is a necessary step in scale construction. The PCA conducted in this study verified the homogeneity of the N-SEMIE items, with all 11 items showing high loadings on the one underlying factor (see Table 3). This factor explained a substantial 63.5% of the variance in the data. Moreover, measures of internal consistency were very high (Cronbach’s $\alpha = 0.94$ and mean inter-item correlation = 0.60), both of which indicating that the N-SEMIE items fit well together on the same scale.
In the recently conducted PCA study relating to the Norwegian version of the “Self-efficacy for therapeutic mode use” (N-SETMU; Bonsaksen & Carstensen, 2017), a one-factor structure was established. Similarly, none of the methods employed in the current study (Eigenvalue assessment, assessment of explained variance, scree plot inspection and the Parallel Analysis) suggested that a second factor should be extracted based on the N-SEMIE items. Thus, we conclude that the N-SEMIE items should be treated as expressions of only one underlying factor.

Thus, for practical purposes, the scale score can be viewed as a numeric expression of the respondent’s self-efficacy for managing interpersonal events in general. Occupational therapy educators may use the scale to monitor and assess their students’ self-efficacy for managing the interpersonal tasks of practice, and students and inexperienced therapists may indeed use it for their own self-reflection. In educational research, the scales may be used to assess the students’ progression across time, as recent studies exemplify (Hussain, Carstensen, Yazdani, Ellingham, & Bonsaksen, 2017; Schwank, Carstensen, Yazdani, & Bonsaksen, 2018). Subsequent intervention research may be able to utilize the scales as outcome measures when assessing the efficacy of interventions.

**Future research**

Future research may further validate the N-SEMIE in terms in convergent, discriminant, and predictive validity in different samples and contexts. Further psychometric research on the tool may also employ alternative test-theory approaches, like Rasch analysis (Bond & Fox, 2001). One may also explore predictors of self-efficacy for managing interpersonal events among occupational therapy students and practitioners. The latter might help targeting groups of students and practitioners who are in need of additional support in this particular skills area. According to the Bandura’s self-efficacy theory (1997), self-efficacy increases with own experience, and by means of “vicarious experience” based on social modeling. Thus, we
may hypothesize different N-SEMIE scores between students in different year cohorts, and between therapists with different length of experience.

**Methodological considerations**

Relatively young students in their second year of study comprised the sample. This sample homogeneity should be taken into consideration when interpreting the results, and generalizations to groups of older and more experienced therapists should be done with caution. The study is also limited by a relatively small sample. Nunnally (1978) suggested a 10:1 ratio; i.e., that there preferably should be ten times as many subjects as variables. The present sample consisted of 106 participants, and the PCA was applied to eleven variables in the N-SEMIE instrument. Thus, the sample size was in the lower range – however, the correlation matrix was appropriate for factor analysis, as suggested by the obtained KMO value and by the statistically significant Bartlett’s test. The sample was one of convenience, and this may limit the generalizability of the study results. However, recruiting participants from two higher education institution adds to the external validity of the results. The substantial variance proportion explained by the extracted factor, the high factor loadings, and the very high internal consistency estimates indicate that the scale score is relevant to apply in subsequent research and audits.

**Conclusion**

This study showed that the N-SEMIE scale had a one-factor structure. The questionnaire items had high factor loadings and a high estimate of internal consistency, indicating that the scale may be used in research and audits among occupational therapy students and practitioners. Self-efficacy for managing interpersonal events may be treated as a higher-order concept in relationship to its specific constituents (i.e., the scale items). Future studies may use the scale in different populations and within different contexts.
Acknowledgements

We are grateful for the questionnaire responses granted by the participating students.

Competing interests

The authors have no competing interests.

Funding

The study received no funding from any source.
References


Psychometric properties of the N-SEMIE


## Table 1

**Sociodemographic characteristics of the study participants (n = 106)**

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>All (n = 106)</th>
<th>Oslo (n = 45)</th>
<th>Trondheim (n = 61)</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>24.3 (5.8)</td>
<td>26.1 (7.7)</td>
<td>22.9 (3.4)</td>
<td>0.01</td>
</tr>
<tr>
<td>Gender</td>
<td>n (%)</td>
<td>n (%)</td>
<td>n (%)</td>
<td>p</td>
</tr>
<tr>
<td>Men</td>
<td>23 (21.7)</td>
<td>10 (22.2)</td>
<td>13 (21.7)</td>
<td>0.91</td>
</tr>
<tr>
<td>Women</td>
<td>83 (78.3)</td>
<td>35 (77.8)</td>
<td>48 (78.7)</td>
<td></td>
</tr>
</tbody>
</table>

*Note.* Differences between sample subsets analyzed with independent *t*-tests (age) and *χ²*-tests (gender).
Table 2

The Norwegian Self-Efficacy for Managing Interpersonal Events (N-SEMIE): items, mean scores, standard deviations, and actual score range (n = 106)

<table>
<thead>
<tr>
<th>When I work with clients I am confident in my ability to manage</th>
<th>M (SD)</th>
<th>Actual score range</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) expression of strong emotion</td>
<td>6.03 (1.78)</td>
<td>3-10</td>
</tr>
<tr>
<td>2) intimate self-disclosures</td>
<td>6.51 (1.90)</td>
<td>2-10</td>
</tr>
<tr>
<td>3) power dilemmas</td>
<td>5.42 (1.62)</td>
<td>2-10</td>
</tr>
<tr>
<td>4) non-verbal cues</td>
<td>6.20 (1.72)</td>
<td>2-10</td>
</tr>
<tr>
<td>5) crisis points</td>
<td>5.90 (1.55)</td>
<td>3-10</td>
</tr>
<tr>
<td>6) resistance and reluctance</td>
<td>5.58 (1.63)</td>
<td>2-10</td>
</tr>
<tr>
<td>7) boundary testing</td>
<td>5.55 (1.63)</td>
<td>2-10</td>
</tr>
<tr>
<td>8) empathic breaks</td>
<td>5.69 (1.56)</td>
<td>3-10</td>
</tr>
<tr>
<td>9) emotionally charged tasks and situations</td>
<td>5.90 (1.60)</td>
<td>2-10</td>
</tr>
<tr>
<td>10) limitations of therapy</td>
<td>5.78 (1.49)</td>
<td>3-10</td>
</tr>
<tr>
<td>11) contextual inconsistencies</td>
<td>5.96 (1.52)</td>
<td>3-10</td>
</tr>
</tbody>
</table>

Mean actual score range: 7.5
Table 3

One-factor solution of the N-SEMIE, showing factor loadings, communalities, Eigenvalue estimates ($\lambda$), reliability estimates (Cronbach’s $\alpha$), and explained variance ($n = 106$)

<table>
<thead>
<tr>
<th>Items</th>
<th>Factor 1</th>
<th>Communalities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crisis points</td>
<td>0.84</td>
<td>0.71</td>
</tr>
<tr>
<td>Empathic breaks</td>
<td>0.83</td>
<td>0.69</td>
</tr>
<tr>
<td>Contextual inconsistencies</td>
<td>0.83</td>
<td>0.69</td>
</tr>
<tr>
<td>Resistance and reluctance</td>
<td>0.82</td>
<td>0.68</td>
</tr>
<tr>
<td>Emotionally charged situations</td>
<td>0.82</td>
<td>0.67</td>
</tr>
<tr>
<td>Limitations of therapy</td>
<td>0.81</td>
<td>0.66</td>
</tr>
<tr>
<td>Power dilemmas</td>
<td>0.80</td>
<td>0.64</td>
</tr>
<tr>
<td>Boundary testing</td>
<td>0.79</td>
<td>0.63</td>
</tr>
<tr>
<td>Intimate self-disclosure</td>
<td>0.75</td>
<td>0.57</td>
</tr>
<tr>
<td>Non-verbal cues</td>
<td>0.74</td>
<td>0.54</td>
</tr>
<tr>
<td>Strong emotions</td>
<td>0.72</td>
<td>0.52</td>
</tr>
</tbody>
</table>

$\lambda$ 6.98

Cronbach’s $\alpha$ 0.94

Mean inter-item correlation 0.60

**Explained variance** 63.5%

Note. Results derived from the exploratory Principal Component Analysis and scale reliability analysis.