THE METHODS OF DATA COLLECTION
AND ANALYSIS
IN EDUCATIONAL RESEARCH

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Polish Adaptation and Psychometric Evaluation of the Reflective Practice Questionnaire: Teachers and Pedagogues Version*

Abstract

The aim of the study was to design a Polish adaptation of the Reflective Practice Questionnaire (RPQ) and to establish its psychometric properties. The RPQ, which measures reflective capacity through seven subscales – Reflective Capacity, Self-Appraisal, Desire for Improvement, General Confidence, Communication Confidence, Uncertainty, and Stress Interacting with Clients – was adapted through a process of translation, cultural modification, and reliability validation. For the Reflective Capacity scale, theoretical and criterion validity were examined using the Brief COPE and the Rumination-Reflection Questionnaire. Data were collected from 63 bilingual participants in an initial study and 403 teachers in a subsequent study. The internal consistency of the Polish RPQ ranged from a Cronbach's alpha of 0.72 to 0.89, and a second-order model of the Reflective Capacity scale provided the best fit to the data. Weak positive correlations were observed between Reflective Capacity and both reflective private

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 * The full version of the tool in Polish is available for download at: Researchhgate.net and Academia.edu under the title: Polish Adaptation and Psychometric Evaluation of the Reflective Practice Questionnaire: Teachers and Educators Version.

self-consciousness and selected Brief COPE scales (planning, instrumental and emotional support, self-blame). Results indicate that the Polish adaptation of the RPQ is a useful tool for research and professional development in educational contexts, though its theoretical limitations should be acknowledged. Future research should examine its application in academic studies and in evaluations of teacher training program effectiveness.

Keywords: reflective practice, Reflective Practice Questionnaire, teacher development, reflective practice capacity.

Introduction

Reflective practice is related to concept such as reflection, reflectiveness, or reflective learning. Although difficult to validate empirically, the concept has been popularized in many professions such as education and health sciences due to the assumption that reflective capacity can improve the quality of human services. Furthermore, there is an assumption that professionals have the specific capacity necessary to be reflective practitioners (McGregor & Cartwright, 2011; Priddis & Rogers, 2018; Bielinis, 2020). This reflective capacity is 'regarded by many as an essential characteristic for professional competence'(Mann et al., 2009, p. 595). Therefore, many authors reflect on solutions to support teachers' reflective practice (McGarr & McCormack, 2016; Mulryan-Kyne, 2021) and develop instruments for its scientific investigation (I'Anson et al., 2003; Kaasila & Lauriala, 2012; Belvis et al., 2013).

Concepts of reflective practice grounded in the progressive philosophy of John Dewey (1933) and in the Donald D. Schön's (1987) idea of praxeology are spread worldwide in many areas, including education (Mizerek, 2021). Dewey's model presented a vertical dimension of reflection which encompasses different levels of reflection on experience - from surface to deep layers: those more difficult to reach and less often represented by professionals (Dewey, 1933; Hatton & Smith, 1995; Mezirow, 2003; Mann et al., 2009; Moon, 2013). Inspired by Dewey, Schön's conception of reflective practice highlights the praxeological aspects of combining practice and theory and the iterative dimension of reflection (Mann et al., 2009, p. 597). According to Schön, the process of reflection is initiated by experience, allowing the individual to create new understanding and to apply new strategies of be-

haviour in the future. The aim of reflection is therefore to improve future actions (Boud et al., 1985). This way of framing reflective practice coincides with the belief of Carl Rogers that no one can be taught how to teach (Rogers, 1957; Schön, 1987). What is essential in the process of learning how to teach is the individual experience of everyday situations. The reason for learning, according to the authors mentioned, is the experience of being concerned about something that has happened during the day.

The interweaving of the two dimensions of reflection is related to reflective capacity – a skill that can be developed by undertaking appropriate practices to analyse one's own work within a community of other people. The social context of reflective capacity is embedded in Dewey's concept, which emphasised the social and relational dimensions of reflection (1933).

The concept of reflective practice has limitations (Quicke, 1996; Cáceres, 2017; Claxton, 2021). One of them is the difficulty of empirical verification of Schön's assumptions and measuring the effectiveness of educational interventions of developing professionals' reflective capacity. This is challenging especially as 'reflective practice cannot be a prescriptive rubric of skills to be taught; in fact, to see it in this way reverts to the very mechanistic assumptions reflective practice was meant to exile' (Edwards & Thomas, 2010). For this reason, any attempts to develop research tools to explore the reflective capacity of professionals deserve attention.

Nguyen et al. (2014) defined reflection as 'the process of engaging self in attentive, critical, exploratory and iterative interaction with one's thoughts and actions, and their underlying conceptual frame, with a view to changing them and a view on the change itself (p. 1176). Perhaps because of the necessity for respondents to be individually involved in the development of their own reflective practice, most existing tools are self-descriptive in nature (Ooi et al., 2021). They seem to assume a sincere commitment from the person completing the questionnaire and a disposition to give truthful answers. Referring to Ooi et. al, authors of a systematic review of currently available tools describing reflective practice for healthcare professionals, it can be noted that there are several scientifically described instruments that support the exploration of the phenomenon of reflection. One of them is the acclaimed Reflective Questionnaire (Kember et al., 2000; Odrowąż-Coates & Perkowska-Klejman, 2017), which focuses on students' reflective thinking.

Another example is the Self-Reflection and Insight Scale used for measuring individual differences in private self-consciousness (Grant et al., 2002). Other research tool is The Reflective Judgment Interview (King & Kitchener, 2004) used in Poland by Anna Perkowska-Klejman and Anna Odrowąż-Coates (2021). In Poland there is also the Reflexivity Questionnaire, which is used to diagnose reflexivity as a cognitive style characteristic. Therefore, it is used to explore aspects of reflexivity other than the professional relations with clients in the human services sector (Matczak et al., 2020). Neither these nor other recommended tools address Schön's construct of reflective practice. They are very useful for research, but do not directly consider the context of the teacher-student interactions highlighted in the Reflective Practice Questionnaire (RPQ) (Priddis & Rogers, 2018).

The RPQ was developed in response to the need for self-report measures of reflective practice (Rogers et al., 2019). It can be used with a variety of professional groups including healthcare professionals, but also teachers, social workers, psychologists and any other human services professionals (Rogers et al., 2019; Gustafsson et al., 2021; Van Winkle et al., 2021; Day et al., 2022). Consequently, the instrument allows for conducting research in a group of people preparing to become teachers as well as in a group of experienced practitioners (Fuertes-Camacho et al., 2021; Martincová et al., 2021; Day et al., 2022). Currently, the RPQ is the only questionnaire, the reliability of which has been verified, that allows the exploration of reflective practice with both students and professionals and is flexible enough to be used with a variety of professional groups. The original version of the RPQ consists of statements that relate to professionals' opinions about themselves and their experiences in professional interactions. The individuals to whom the statements refer were referred to as 'clients' by the authors (e.g. ROA 24. After interacting with clients, I wonder about my own experience of the interaction; ROA 16. After interacting with clients, I wonder about the client's experience of the interaction). Since "interactions may be with clients, patients, customers, patrons, students, or any other term a profession uses to describe the recipients of the service" (Priddis & Rogers, 2018, p. 92), in some cases it seems necessary to replace the term "client" with another term. During the study in the context of the Polish education system, it was essential to use the term 'student' in the tool. This term is the most natural

in communication with teachers, and its use in the tool makes it more comprehensible to teacher respondents.

The questionnaire consists of 40 items. The first part of the tool is the 16-item Reflective Capacity (RC) scale, which includes 4 subscales: Reflective in Action (RiA), Reflective on Action (RoA), Reflective with Others (RO) and Self-Appraisal (SA). Only this RPQ scale is the focus of the factor analysis in this and other articles, because it is central to the exploration of reflective practice.

Besides the RC scale, the RPQ includes six, four-item scales to explore the features relevant to reflective practice. These scales are: Self-appraisal (SA), which assesses an individual's ability to evaluate their own performance critically (Schön, 1987, 2013; Yue et al., 2020); Desire for improvement (DfI), which reflects the motivation to enhance one's skills and professional abilities (Priddis & Rogers, 2018); Confidence – general (CG), measuring overall self-assurance in professional contexts, it ties to self-efficacy and resilience in overcoming obstacles (Bandura, 1977; Shea et al., 2016); Confidence – communication (CC), focusing specifically on confidence in interpersonal interactions and expressing ideas effectively, it aligns with social self-efficacy and interpersonal skills theories (Priddis & Rogers, 2018); Uncertainty (UNC), which captures feelings of doubt or ambiguity in professional situations (Dewey, 1933); Stress interacting with clients (SC), assessing the level of stress experienced during client interactions (Kavanagh et al., 2003); and Job satisfaction (JS), which evaluates the individual's overall contentment with their professional role (Kavanagh et al., 2003). 'The reason for including a wide array of sub-scales within the RPQ was to provide a succinct self-report instrument of use to scholars wishing to investigate current issues regarding reflective practice' (Rogers et al., 2019, p. 3). As the authors point out, all of the 10 scales can be used separately in different research contexts, as demonstrated by Aitken et al. (2021).

The other subscales of the RPQ were included due to the relationship between reflective practice and the other variables, which describe both the conditions for developing reflective practice (DfI subscale) and the benefits of supervision conducted in a reflective practice approach. These assumed benefits are confidence – general, confidence – communication and job satisfaction. The RPQ also allows for exploration of the potential negative effects

of supervision conducted in a reflective practice approach; uncertainty and stress while interacting with clients (Priddis & Rogers, 2018). The RPQ uses the authors' recently updated six-point Likert scale: very rarely, rarely, sometimes, often, very often, almost always. "The full RPQ has a broad scope and seeks to assess not only reflective capacity per se" (Gustafsson et al., 2021).

Therefore, the RPQ includes 6 subscales in addition to the Reflective Capacity subscale, which are a consequence of thinking of reflective practice as a capacity that can be developed only in relationship with others. Making this assumption, the authors of the tool have so far conducted correlational research on the relationship between the individual subscales of the RPQ and the evaluation of supervision, creating a separate tool to examine respondents' opinions about the benefits of the supervision they have participated in. By using this additional tool, it was possible to infer the effectiveness of supervision, which is considered the most appropriate method for developing reflective capacity.

The satisfactory reliability of the RPQ and its individual subscales has been confirmed (Rogers et al., 2019; Gustafsson et al., 2021; Day et al., 2022). In the correlation analyses, the expected intercorrelations between scales were observed. The RPQ was validated using principal component analysis (PCA). The analyses confirmed the unidimensional structure of the RC scale (Gustafson et al., 2021). However, it has not yet been determined whether the unidimensional structure of the RC scale may be confirmed by CFA (Confirmatory Factor Analysis). The aim of this study goes some way to addressing this issue. The aim of the research was:

1. to design the Polish cultural adaptation of the RPQ and
2. to establish the psychometric properties of the adapted version of RPQ.

Methods

The Polish adaptation of RPQ has been designed and carried out in accordance with the Guidelines for the process of cross-cultural adaptation of self-report measures (Beaton et al., 2000).

Ethics

The study adhered to ethical principles of informed consent, transparency and confidentiality. The study was conducted within the current Polish law on research involving adults. The adaptation of RPQ was a part of a research project scrutinised, approved and financed by the Polish National Science Centre (Grant no. 2020/04/X/HS6/01018).

Translation procedure

The RPQ was translated by two independent translators with the following characteristics: a degree in English and Polish philology, knowledge of the concept of reflective practice, supported by academic publications in this area and teaching experience of working with students. The two versions were compared, and a final version was agreed between the translators and the project manager. The next step was back-translation by two professional translators. These were unrelated to the previous translators. The criteria for the selection of the contractors were analogous to the translation process in the previous step. The translation was then assessed by five independent expert assessors The panel consisted of two specialist educators in reflective practice, a psychologist, a social worker and a specialist in health sciences. Each assessor has many years of teaching experience and knowledge of the concept of reflective practice. Representatives of different professions were invited to join the panel in order to make the translation of the RPQ as flexible as possible for research in diverse professional groups. The criteria used were semantic, idiomatic, experiential and conceptual equivalence. Due to inconsistencies in the scores of some items as measured by the W. Kendall coefficient ($p > 0.05$), it was necessary to carefully analyse individual items with emphasis on correction of items with the lowest average ranks and those with the highest standard deviation scores. The assessors' recommendations focused mainly on the need to consider the adaptation of the items to cultural context as more relevant than the accuracy of the translation of particular words. After the next version of the translation was discussed, a test of the prefinal version of the RPQ was carried out.

Participant sample

Test of the prefinal version of the RPQ

The sample consisted of 63 bilingual students (23 from the Jagiellonian University and 40 from the Pedagogical University in Kraków in Poland) finishing their English studies and experienced in teaching practice or working as teachers. Twenty-five participants from this group took part in the test-retest stability study. The non-participation of the remaining people in the re-survey was due to non-attendance on the day of the survey, or refusal to participate. Another reason for the exclusion of some individuals' responses was also due to uncertainty in the pairing of questionnaires from the first and second measurements. In cases of uncertainty due, for example, to the respondent's ID not being stated on the questionnaire, the questionnaires were excluded from the analyses.

Psychometric validation of the RPQ in the Polish version

The study which aimed at psychometric validation of the RPQ in the Polish version, was conducted on a sample of 403 teachers from different types of schools in Poland. It was planned to select a random sample from among teachers working in different types of schools in the South Poland. Due to low returnability and lack of interest in participating in the study, the sampling strategy was changed. Eventually the sampling was consecutive. The study involved teachers from Poland with different levels of seniority and from different types of schools. Those who took part in the study were invited to participate because of their previous teaching cooperation with the Institute of Pedagogy at the Jagiellonian University and the Malopolska Teacher Training Centre. Teachers had the opportunity to complete the survey both on paper and online via the SurveyMonkey platform. In the case of teachers in Kraków, the survey was conducted as an auditorium survey. As for teachers from other locations, an online questionnaire was used. Finally, 130 teachers completed the paper questionnaire and 273 completed the online questionnaire. During the comparative analyses (Mann-Whitney *U*-test), no statisti-

cally significant differences were found between the groups of respondents depending on the form of questionnaire used.[1]

Table 1. Characteristics of study sample

Type of school	n (%)
Preschool teacher	46 (11.4)
Primary school teacher	272 (67.5)
Secondary school teacher	85 (21.1)
Total	403 (100)
Age	n (%)
21–30	48 (11.9)
31–40	70 (17.4)
41–50	127 (31.5)
51–60	119 (29.5)
61–70	25 (6.2)
ND	14 (3.5)
Gender	n (%)
Female	343 (85.1)
Male	43 (10.7)
ND	17 (4.2)

Source: Author's own elaboration.

It seems significant that all the strategies considered most effective in coping with stress correlate positively with job satisfaction and negatively with the denial strategy, which is considered effective, but only in the very short term

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[1] This sampling has weaknesses, but given the capacity of the budget, the availability of respondents, the sensitive subject matter of the questionnaire and the volume of the questionnaire, it proved to be an effective compromise to collect data from those who agreed to participate in the study with their greatest possible commitment.

(Carver, 1997). In addition, it is worth noting correlations with the self-blaming strategy, which is considered less effective. It correlates positively with desire for improvement, uncertainty, and stress interacting with pupils. It also correlates negatively with general confidence and confidence in communication.

There are also some correlations between ways of coping with stress and RC. Again, the correlations are very weak but represent the directions of the expected relationships.

Table 2. The Spearman's correlations of additional RPQ subscales in Polish version with Brief COPE subscales ($n = 403$)

Brief Cope subscale	DfI	CG	CC	UNC	SC	JS
Problem-focused strategies						
Active coping	0.01	0.15**	0.19**	−0.17**	−0.14**	0.17**
Planning	0.10*	0.20**	0.26**	−0.19**	−0.16**	0.30**
Instrumental support	0.15**	−0.05	0.05	0.01	−0.02	0.14**
Emotion-focused strategies						
Positive reframing	0.07	0.14**	0.10*	−0,10*	−0.14**	0.19**
Acceptance	0.08	0.04	0.04	0.00	0.04	0.10*
Humour	0.10	−0.05	−0.03	0.05	0.09	−0.01
Religion	0.01	−0.03	−0.09	0.01	−0.08	0.08
Emotional support	0.14**	−0.06	0.06	−0.03	0.00	0.15**
Dysfunctional strategies						
Self-distraction	−0.03	−0.04	−0.10	0.07	0.09	−0.09
Denial	0.02	−0.18**	−0.21**	0.22**	0.27**	−0.23**
Venting	0.08	−0.09	−0.07	0.11*	0.18**	−0.01
Substance-use	−0.04	0.07	−0.02	0.05	0.18**	−0.08
Behavioural disengagement	−0.03	−0.04	−0.10*	0.07	0.09	−0.08
Self-blame	0.22**	−0.23**	−0.19**	0.33**	0.30**	−0.07

Note: ** indicates $p < 0.01$; * indicates $p < 0.05$.

Source: Author's own elaboration.

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Instrumental support	0.15**	−0.05	0.05	0.01	−0.02	0.14**
Emotion-focused strategies						
Positive reframing	0.07	0.14**	0.10*	−0,10*	−0.14**	0.19**
Acceptance	0.08	0.04	0.04	0.00	0.04	0.10*
Humour	0.10	−0.05	−0.03	0.05	0.09	−0.01
Religion	0.01	−0.03	−0.09	0.01	−0.08	0.08
Emotional support	0.14**	−0.06	0.06	−0.03	0.00	0.15**
Dysfunctional strategies						
Self-distraction	−0.03	−0.04	−0.10	0.07	0.09	−0.09
Denial	0.02	−0.18**	−0.21**	0.22**	0.27**	−0.23**
Venting	0.08	−0.09	−0.07	0.11*	0.18**	−0.01
Substance-use	−0.04	0.07	−0.02	0.05	0.18**	−0.08

Table 3 (continued)

Brief Cope subscale	DfI	CG	CC	UNC	SC	JS
Behavioural disengagement	−0.03	−0.04	−0.10*	0.07	0.09	−0.08
Self-blame	0.22**	−0.23**	−0.19**	0.33**	0.30**	−0.07

Note: ** indicates $p < 0.01$; * indicates $p < 0.05$.

Source: Author's own elaboration.

Analysis

The statistical analysis was conducted using the SPSS, jamovi, Mplus and MH programs. P values less than 0.05 were considered statistically significant. The investigation was divided into three parts. First analyses were conducted to verify the quality of the translation of the RPQ into Polish. For testing the equivalence of Polish and English versions of the PQ the Paired sample *t* test was used. For testing the test-retest correlation the Spearman's correlation was used. At this stage the test of Overall Marginal Homogeneity was helpful. The McNemar test and the Stuart-Maxwell test were used in the MH Programme. These tests were useful in establishing the equivalence of the answers marked in the individual items of the RPQ in the Polish and English versions.[2] They were also carried out in order to explore the ways of answering in the Polish version in a test-retest study. The W-Kendall coefficient was applied to test and verify the degree of concordance within the assessment panel. Next, the reliability of the individual subscales of the RPQ in the Polish version was examined. For this purpose, Pearson's inter-item correlations, Cronbach's α and McDonald's omega coefficients were used (Hayes & Coutts, 2020). The final stage of analyses was verification of theoretical and criterion validity. The unidimensional structure of the Reflective Capacity sub-scale of RPQ was verified by Confirmatory Factor Analysis (CFA). The CFA analysis was per-

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[2] Due to a limit on the length of the paper, the author has refrained from presenting the detailed results of these analyses. However, they are mentioned because they contributed to important developments in the research process. The publication of item-specific results in this text seems less important than analyses such as scale relationships, theoretical validity results or criterion validity results, therefore they are only mentioned.

formed on a polychoric correlation matrix using weighted least squares mean and the variance-adjusted (WLSMV) estimator implemented in Mplus software (Grygiel et al., 2013; Brown, 2015; Grygiel et al., 2019; Wang & Wang, 2020). Criterion validity was tested using the Pearson product-moment correlation coefficient between the RPQ and external scales (Beaton et al., 2000).

Results

Reliability of the Polish version of RPQ

Assessment of absolute atability of the English and Polish versions of the RPQ was carried out on a bilingual sample. The results indicated that the one-week test-retest reliability for each item was between 0.34 and 0.84. For items with weaker scores, improvements were made to some culturally context-specific wording. An example is the addition of the subject 'I myself' in the Polish language version in item 24 ("After interacting with clients I wonder about my own experience of the interaction", RoA).

The internal consistency of the adapted Reflective Practice Questionnaire was acceptable or good, depending on subscale (Nunnally & Bernstein, 1994). The lowest Cronbach alpha coefficient was 0.72 and the lowest Omega coefficient was 0.73. The highest coefficients were observable in the Job Satisfaction, Reflective Capacity and Desire for Improvement subscales.

Table 4. Means, standard deviation (SD), Cronbach's alpha and McDonald's Omega values for the RPQ in Polish adaptation sub-scales

Sub-scale	Mean	SD	Alpha	McDonald's Omega
Reflective in action	3.53	0.77	0.73	0.73
Reflection on action	3.93	0.76	0.78	0.78
Reflective with others	3.72	0.76	0.75	0.76
Self-appraisal	3.68	0.78	0.72	0.73
Reflective Capacity	3.71	0.59	0.87	0.86
Desire for improvement	3.92	0.93	0.86	0.86

Table 4 (continued)

Sub-scale	Mean	SD	Alpha	McDonald's Omega
Confidence-general	3.99	0.93	0.83	0.83
Confidence-communication	4.58	0.71	0.79	0.79
Uncertainty	2.63	0.76	0.83	0.83
Stress interacting with clients	2.53	0.85	0.79	0.79
Job satisfaction	4.38	1.07	0.89	0.90

Source: Author's own elaboration.

It seems significant that all the strategies considered most effective in coping with stress correlate positively with job satisfaction and negatively with the denial strategy, which is considered effective, but only in the very short term (Carver, 1997). In addition, it is worth noting correlations with the self-blaming strategy, which is considered less effective. It correlates positively with desire for improvement, uncertainty, and stress interacting with pupils. It also correlates negatively with general confidence and confidence in communication.

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Acceptance	0.08	0.04	0.04	0.00	0.04	0.10*
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Religion	0.01	−0.03	−0.09	0.01	−0.08	0.08
Emotional support	0.14**	−0.06	0.06	−0.03	0.00	0.15**
Dysfunctional strategies						
Self-distraction	−0.03	−0.04	−0.10	0.07	0.09	−0.09
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Venting	0.08	−0.09	−0.07	0.11*	0.18**	−0.01
Substance-use	−0.04	0.07	−0.02	0.05	0.18**	−0.08
Behavioural disengagement	−0.03	−0.04	−0.10*	0.07	0.09	−0.08
Self-blame	0.22**	−0.23**	−0.19**	0.33**	0.30**	−0.07

Note: ** indicates $p < 0.01$; * indicates $p < 0.05$.

Source: Author's own elaboration.

Intercorrelations between the subscales consigned the results to be similar to previous studies conducted with the RPQ. Table 6 shows the inter-correlation matrix for each subscale in the Polish version of the RPQ, including *the RC sub-scale and its 4 components* (RiA, RoA, RO and SA).

Table 6. Pearson inter-correlations among 10 RPQ sub-scales and RC sub-scale in Polish adaptation

	RiA	RoA	RO	SA	RC	DfI	CG	CC	UNC	SC	JS
RiA	1										
RoA	0.54**	1									
RO	0.31**	0.41**	1								
SA	0.50**	0.56**	0.43**	1							
RC	0.76**	0.81**	0.70**	0.81**	1						
DfI	0.41**	0.44**	0.53**	0.69**	0.67**	1					
CG	−0.02	0.12*	−0.06	−0.14**	−0.03	−0.32**	1				
CC	0.08	0.21**	0.17**	−0.04	0.14**	−0.10*	0.69**	1			
UNC	0.23**	0.15**	0.18**	0.47**	0.33**	0.44**	−0.49**	−0.51**	1		
SC	0.18**	0.11*	0.06	0.32**	0.22**	0.20**	−0.33**	−0.40**	0.57**	1	
JS	0.30**	0.36**	0.39**	0.21**	0.41**	0.36**	0.21**	0.37**	−0.11*	−0.37**	1

Note: ** indicates $p < 0.01$; * indicates $p < 0.05$.

Source: Author's own elaboration.

Validity of the Polish version of the RC scale

Theoretical (Construct) Validity

Following previous research using principal component analysis (PCA) of the Reflective Capacity subscale (Gustafsson et al., 2021; S. L. Rogers et al., 2019), a confirmatory factor analysis (CFA) was conducted to verify the unidimensional structure of the RPQ. Results indicated that the one factor model fit inadequately (RMSEA = 0.117, $p_{RMSEA} < 0.05 < 0.01$; CFI = 0.699; TLI = 0.653). This result suggests that the 16 item Reflective Capacity scale is not precisely unidimensional. Therefore, a confirmatory analysis was again applied with different model variants – 2 and 3 factor models. None of these achieved adequate measures of fit. For that reason, measures of the fit of the four-factor model were checked. The four-factor model was found to have poor fit (RMSEA = 0.086, $p_{RMSEA} < 0.05 < 0.01$; CFI = 0.929; TLI = 0.913). Due to correlations between the RPQ subscales, factor analysis with the second-order model was carried out (Brown, 2015; Chen et al., 2006). This model also proved to have poor fit (RMSEA = 0.087, $p_{RMSEA} < 0.05 < 0.01$; CFI = 0.926; TLI = 0.911). The RMSEA coefficient is too high to say the model fits the data perfectly. On the one hand, the CFI and TLI measures are acceptable. Although the results indicated that the second-order model was not the best fit to the data, all items were significantly related to the general latent trait (Figure 1). It seems the structure of RPQ requires more exploration. It is certainly worth conducting further research with representatives of other professional groups to verify this model.

It seems significant that all the strategies considered most effective in coping with stress correlate positively with job satisfaction and negatively with the denial strategy, which is considered effective, but only in the very short term (Carver, 1997). In addition, it is worth noting correlations with the self-blaming strategy, which is considered less effective. It correlates positively with desire for improvement, uncertainty, and stress interacting with pupils. It also correlates negatively with general confidence and confidence in communication.

There are also some correlations between ways of coping with stress and RC. Again, the correlations are very weak but represent the directions of the expected relationships.
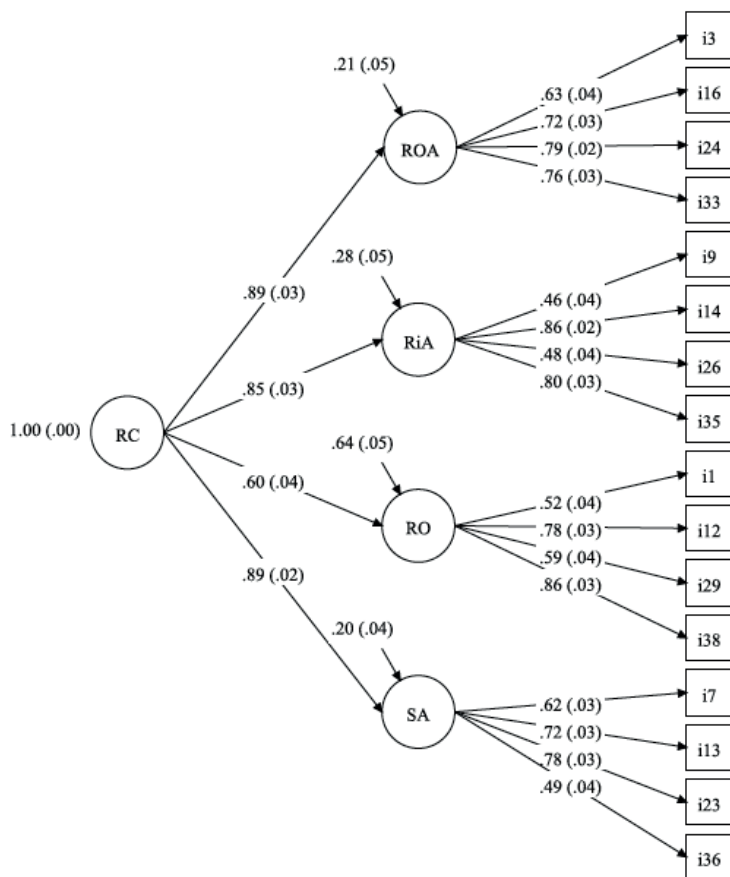
Figure 1. Factorial structure of the Polish adaptation of the RC scale of the RPQ. Standardized loadings from the CFA

Source: Author's own elaboration.

Table 7. The Spearman's correlations of additional RPQ subscales in Polish version with Brief COPE subscales ($n = 403$)

Brief Cope subscale	DfI	CG	CC	UNC	SC	JS
Problem-focused strategies						
Active coping	0.01	0.15**	0.19**	−0.17**	−0.14**	0.17**
Planning	0.10*	0.20**	0.26**	−0.19**	−0.16**	0.30**
Instrumental support	0.15**	−0.05	0.05	0.01	−0.02	0.14**
Emotion-focused strategies						
Positive reframing	0.07	0.14**	0.10*	−0,10*	−0.14**	0.19**
Acceptance	0.08	0.04	0.04	0.00	0.04	0.10*
Humour	0.10	−0.05	−0.03	0.05	0.09	−0.01
Religion	0.01	−0.03	−0.09	0.01	−0.08	0.08
Emotional support	0.14**	−0.06	0.06	−0.03	0.00	0.15**
Dysfunctional strategies						
Self-distraction	−0.03	−0.04	−0.10	0.07	0.09	−0.09
Denial	0.02	−0.18**	−0.21**	0.22**	0.27**	−0.23**
Venting	0.08	−0.09	−0.07	0.11*	0.18**	−0.01
Substance-use	−0.04	0.07	−0.02	0.05	0.18**	−0.08
Behavioural disengagement	−0.03	−0.04	−0.10*	0.07	0.09	−0.08
Self-blame	0.22**	−0.23**	−0.19**	0.33**	0.30**	−0.07

Note: ** indicates $p < 0.01$; * indicates $p < 0.05$.

Source: Author's own elaboration.

It should also be noted that in the Polish study, the RO component stands out from the other four factors with less loading on the general factor. However, the model without this factor did not fit the model well enough, so I decided to leave the factor in the model. It should be noted that in a recent study by Rogers et al. (2023), the RO factor also lagged behind the other factors, which led the authors to the decision to cut-down the RPQ reflection

measure by removing of the RO items from the shortened version of the tool. An explanation for this phenomenon may be the limited experience in supervision and other formalized ways of conducting reflection together with others among respondents. Besides, RO scale assesses reflection with *others*, whereas the other scales are focused on self-reflection. This implies different theoretical assumptions in the exploration of these variables.

Criterion validity

In order to assess criterion validity, correlations of the RPQ subscales in the Polish version with the scales of other questionnaires were tested. The instruments used were the short version of the Rumination-Reflection Questionnaire (Trapnell & Campbell, 1999) in the Polish adaptation by Słowińska et al. (2014) and the Brief Cope Questionnaire (Carver et al., 1989; Carver, 1997) in Polish adaptation by Juczyński & Ogińska (2012). Both instruments are self-descriptive tools. The Rumination-Reflection Questionnaire measures cognitive tendencies, distinguishing between maladaptive rumination and adaptive reflection. The Brief Cope Questionnaire evaluates coping mechanisms, distinguishing between problem-focused, emotion-focused, and avoidance strategies. The use of these tools does not ensure a perfect theoretical fit. However, out of the many existing and tested for their psychometric properties, they were chosen as the most congruent with the humanistic conception of reflective practice by D. Schon.

The short, 12-item version of RRQ – aims to explore the distinction between ruminative and reflective types of private self-consciousness (Trapnell & Campbell, 1999; Słowińska et al., 2014). RRQ explores not exactly the same but similar theoretical concept to reflective practice. The respondent's task is to determine the extent to which each statement describes him or herself. Answers are marked on a 5-point Likert scale. Table 8 illustrates correlations of the Polish version of the RPQ with the Reflection scale of the RRQ.

Table 8. The Spearman's correlations of the Polish RPQ subscales with the Reflection scale of the Reflection-Rumination Questionnaire ($n = 403$)

RPQ sub-scales	Reflection
RiA	0.20**
RoA	0.24**
RO	0.21**
SA	0.26**
RC	0.30**

Note: ** indicates $p < 0.01$.

Source: Author's own elaboration.

Discussion

The aim of the study presented in this article was to translate into Polish and establish the psychometric properties of the Polish version of the Reflective Practice Questionnaire. This is the first study conducted in Poland with the RPQ and the first study focused on teachers' reflective capacity. Previous research was conducted among students preparing to work as teachers (Fuertes-Camacho et al., 2021; Day et al., 2022). It is also the first attempt to create an instrument that supports a systematic study of the reflective practice of Polish teachers.

The findings of the study show the Polish version of the RPQ is a reliable tool for assessing the Reflective Capacity of teachers and students preparing for their future work. The minimal Cronbach's alpha value was 0.72 and McDonald's Omega was 0.73. Furthermore, intercorrelations among the Polish version of RPQ scales were close to expected from the analysis of previous research results (Rogers et al., 2019; Fuertes-Camacho et al., 2021; Day et al., 2022). The results obtained are worth relating to research conducted in other countries. Regarding the reliability of the RPQ, it showed satisfactory or very good properties (Cronbach's alpha between 0.70 and 0.90 for each scale). However, the results of the factor analysis of the Reflective Capacity scale allow for varying conclusions. In a study on a sample of Polish teachers,

the model with the best, but not perfect fit to the data in Confirmatory Factor Analysis was the second-order model. Meanwhile, both Rogers et al. (2019) and Gustafsson (2021) inferred one single component as a result of Principal Content Analysis.

Regarding correlations between the RPQ scales, it is worth mentioning a study with the original version of the tool that took place on a sample of Australian mental health practitioners (Priddis & Rogers, 2018) and a study on a sample of Scottish initial teacher education students (Day et al., 2022).

In the Polish sample, there are strong inter-correlations among reflective scales such as Reflective Capacity (RC), Reflective-in-Action (RiA), and Reflective-on-Action (RoA), similar to the Australian sample, indicating consistency in reflective practice constructs across contexts. The correlation between Confidence – Communication (CC) and Confidence – General (CG) is much stronger in the Polish sample ($r = 0.69$) compared to the Australian sample ($r = 0.39$), suggesting cultural or occupational differences in how these constructs are related. In both samples, Desire for Improvement (DfI) correlates moderately with Self-Appraisal (SA) and Reflective Capacity (RC). However, the Polish sample shows slightly higher correlations, possibly reflecting a stronger alignment between personal growth and reflective practices in this group. Uncertainty (UNC) shows a weak positive correlation with RC in both samples but is notably stronger in the Australian sample ($r = 0.52$) compared to the Polish one ($r = 0.33$), indicating potential cultural or professional differences in how uncertainty is integrated into reflective practice. Job Satisfaction (JS) correlates negatively with Stress Interacting with Clients (SC/SiC) in both samples, but the relationship is more pronounced in the Polish sample ($r = -0.37$) than in the Australian sample ($r = -0.25$), possibly reflecting differences in workplace dynamics or stress management strategies.

In comparison to Scottish sample, the correlation between Reflective-in-Action (RiA) and Reflective-on-Action (RoA) in the Polish sample is relatively higher (0.54**) than in the Scottish sample (0.45**), indicating stronger interdependence between these dimensions of reflective practice among Polish participants. Both samples show significant correlations between Self-Appraisal (SA) and reflective subscales, such as RoA and Reflective Observation (RO). However, the Scottish sample generally presents slightly stronger

correlations, with SA and RoA correlating at 0.64** compared to 0.56** in the Polish sample.

Confidence-General (CG) demonstrates weak or negligible correlations with most subscales in both samples, emphasizing its independence. On the other hand, Confidence-Communication (CC) correlates more strongly with other scales, such as SA, in the Scottish sample (0.51**) compared to the Polish sample (0.14**). Correlations involving Uncertainty (Unc) vary across the samples; the Scottish sample shows a weaker correlation between Unc and SA (0.22**) than the Polish sample (0.47**), suggesting a greater emotional impact of uncertainty on self-appraisal among Polish participants.

Job Satisfaction (JS) has a moderate positive correlation with CC in the Scottish sample (0.47**) compared to a weaker correlation in the Polish sample (0.37**). Additionally, correlations between JS and Unc are negative in both samples (−0.16** in the Scottish sample and −0.11* in the Polish sample) compared to the Polish sample.

What is more, the results of the survey on the sample of Polish teachers indicate statistically significant lower mean scores than a recent survey of Scottish students (Day et al., 2022). This applies to all subscales of the RPQ. It seems to correlate with the cultural context. What is more, in the Polish study, age correlates negatively with Desire for improvement and with Self-appraisal but does not correlate with the other components of the Reflective Capacity subscale. Age, on the other hand, correlates positively with Confidence-general. It is also worth noting the two high correlations between the subscales (RC and RoA and RC and SA) at 0.81 in the Polish sample, which may suggest that the scale structure may not be totally orthogonal.

To summarize, the theoretical validity of the Reflective Capacity scale of the RPQ seems to be acceptable and the RPQ is suitable for use in both research and in-service training including teachers and, in adapted language form, in the in-service training of professionals of other professions. It should be mentioned that the group of teachers has its own specific characteristics which might determine the psychometric properties of the questionnaire. It is enough to note the impediments to reflection highlighted by Cole (1997). Among them he mentions: anxiety, fear, helplessness, hostility, loneliness and meaninglessness. Polish teachers in recent years have been highly threatened by these phenomena which may have influenced the outcome of the study.

Therefore, the analysis of the factorial structure of the RPQ requires further research.

The correlation analysis of individual RPQ subscales with the scales of other questionnaires provided a basis for positive verification of assumptions about correlations expected. First of all, there was a positive correlation of Reflective Capacity with Reflection as a form of private self-consciousness. There were also correlations between the RC and the other subscales of the RPQ and the scales of the Brief COPE questionnaire.

Limitations of the study

As far as the process of adaptation and verification of the psychometric properties of the RPQ is concerned, both the study at the test-retest stage and the study which aimed at psychometric validation in the Polish version would have benefited from being conducted on a larger sample. Furthermore, it would be worthwhile to involve other professional groups in Poland.

Another limitation is the self-descriptive nature of the RPQ which does not provide a full insight into the reflective capacity of the study participants. Even assuming full engagement of respondents, the impact of the social approval variable should be taken into account and perhaps monitored in future studies. The survey would also benefit from controlling for additional factors such as respondents' truthfulness or attention. However, the use of additional scales was abandoned due to the fact that the RPQ alone consists of 40 items, the RRQ of 16 and the MiniCOPE of 28. Such an elaborate test would have been overwhelming for respondents and would have compromised their psychological wellbeing.

It is also important to note the overrepresentation of women in the survey. On the one hand, such a structure of the research sample corresponds to the actual number of teachers in Poland, which makes the sample reflect the distribution of gender representatives in the national education system. Nevertheless, in the context of psychometric analyses, this may affect the achieved results. Future analyses should take this factor into account at the stage of designing the sample selection.

The last point concerns the theoretical aspect of reflective practice. The statistical data should be interpreted carefully since the constructs of reflective

practice and reflective capacity are difficult to operationalise. The concept of reflective practice is still open to interpretation and does not allow itself to be clearly defined. According to Parsons & Stephenson, it should be mentioned that "the definition of a reflective practitioner is something that remains a matter of debate' (2005). The debate seems to concern not only academics, but also practitioners who completed the Polish version of the RPQ. Many of them were reading questions about their daily work for the first time. The generality of the statements in the questionnaire, e.g. *After interacting with clients I spend time thinking about what was said and done or I gain new insights when reflecting with others about my work*, could be seen as a disadvantage of the questionnaire and at the same time as it's asset, as the general statements allow the RPQ to be used in different individual circumstances. However, it might be considered whether to clarify ambiguous terms such as 'critically' and 'interaction' to the respondents before using the RPQ.

Conclusion

Notwithstanding the ambiguities regarding the factor structure, the RPQ can be used in research and practice to measure variables related to reflective practice. The tool appears to be reliable and valuable in the education of students and teachers and in supporting their professional development. The questionnaire can function as a didactic tool because it draws teachers' attention to these aspects of their work that are sometimes neglected. Some respondents' statements confirm this thesis: 'Sometimes it is useful to look at oneself from the side', 'The questionnaire encouraged me to reflect on a few issues', 'Thank you for the crossfire of the questions. It stimulates reflection on my professional condition'.

Although theoretical research on reflection and reflective practice has a long tradition, opportunities to investigate the characteristics of professionals' reflective practice empirically are still limited, and it is therefore worth continuing to conduct research using the RPQ, as this tool is universal, easy to use and can be valuable to respondents, making a real difference in the way they work. It seems that interest in the RPQ among education researchers and practitioners may increase in the coming years, especially as a short version of the tool is currently being developed as well (Rogers et al., 2023).

A short version of the RPQ is likely to support the conduct of research and enable more frequent use of the RPQ by self-improving teachers.

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