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EPAS objectives and foundation practice self-efficacy:

A replication

Gary Holden, D.S.W.

Jeane Anastas, Ph.D.

Thomas Meenaghan, Ph.D.

New York University: School of Social Work

New York, New York

Draft Manuscript: Do not cite or distribute without permission

Key words: self-efficacy, accreditation, EPAS, CSWE, educational outcomes; outcome measures

The final version of this manuscript for citation is:

Holden, G., Anastas, J., & Meenaghan, T. (2005). EPAS objectives and foundation practice self-efficacy: A replication. *Journal of Social Work Education, 41*(3), 559-570.

The first author may be contacted at: Room 407, MC: 6111, New York University School of Social Work, 1 Washington Square North, New York, NY 10003, [gary.holden@nyu.edu](mailto:gary.holden@nyu.edu)

### **Abstract**

This replication study continued the examination of the psychometric properties of the *Foundation Practice Self-Efficacy Scale* (FPSE) with a sample of MSW students. As in the original study, evidence regarding the reliability, validity and sensitivity to change of this measure was found. First, internal reliability estimates for the FPSE all exceeded .95. Second, in terms of validity, the large positive correlation that had been predicted between the FPSE and the *Social Work Empowerment* scale was observed. Third, the amount of change in students' FPSE total scale scores between pretest and posttest was found to be statistically significant.

## Introduction

Despite the progress being made in recent years, evaluation of the effectiveness of social work education programs remains a major challenge for the profession, especially in relation to accreditation (e.g., Baskind, Shank & Ferraro, 2001; Bogo, Regehr, Hughes, Power & Globerman, 2002; Bogo, et al., 2004; Buchan, et al., 2004; Gingerich, Kaye & Bailey, 1999; Murray, 2001). The calls for improvement in educational outcomes assessment continue (e.g., Gambrill, 2000, 2001a; Hull, Mather, Christopherson & Young, 1994). While the ultimate test of the quality of graduate professionals' education is the quality of the service they render to clients, direct and continuous assessment of this outcome for all graduates is simply not feasible. Therefore educational programs are seeking more realistic yet meaningful ways to obtain feedback on students' and graduates' knowledge and skills, both for purposes of external accountability and for ongoing program development and improvement. This brief report describes the most recent findings regarding the ongoing development of a scale that is tied directly to the foundation curriculum objectives from the CSWE's Educational Policy and Accreditation Standards (EPAS) by which all programs are now being evaluated.

The Social Cognitive Theory Construct self-efficacy (e.g., Bandura, 1977; 1982; 1986; 1997a) has been employed extensively in research outside of social work and has begun to see increased use within the field. Over the past decade our research group has devised a series of social work educational outcome measures that focus on individuals' self-efficacy regarding a variety of social work professional practices. The current study examined the *Foundation Practice Self-Efficacy* scale (FPSE), which is designed to assess students' self-efficacy regarding performance of the behaviors specified in objectives for the foundation year of graduate study by the EPAS.

Evidence supporting the psychometric properties of the data obtained using the FPSE was found in a prior study (Holden, Anastas & Meenaghan, 2003). In that study, reliability estimates (Cronbach's alphas) of .97 were observed for the FPSE at each testing point. In terms of construct validity, as predicted, a large positive correlation between the FPSE and the Social Worker Empowerment scale (Frans, 1993) was found (predicted  $r = .50$ ; observed  $r = .57$ ).

There was a substantial range of mean scores across the individual items of the FPSE at pretest ( $M$ 's: 40.0 – 82.3), indicating that the FPSE was capturing variability in students' self-efficacy regarding the EPAS related content. The mean total scale score change from pretest ( $M = 65.8$ ) to posttest ( $M = 77.8$ ) was statistically significant with an effect size of Cohen's  $U_3 = 80$  (Cohen, 1988). Finally, both the original and the current study included a retrospective pretest, which in essence asks students at posttest to estimate how confident they would have been at pretest, if they had the skills they had at that time, but the knowledge of the professional behavioral performances covered in the scale that they have now. This approach is designed to capture response shift bias, a phenomenon that occurs when respondents change their understanding of the construct being assessed between the pretest and the posttest (e.g., Howard & Dailey, 1979).

In the original study, the mean total FPSE scale score on the retrospective pretest was statistically significantly lower than the mean score on the actual pretest. In other words, students thought they should have been less confident in their skills at the beginning of their program after experiencing two semesters in the program. These findings, combined with its direct derivation from the EPAS, mean that the FPSE may have utility in a wide variety of MSW programs. Its eventual utility will depend, in part, on whether these initial findings are replicated in subsequent research.

While the importance of replication is often noted (e.g., Amir & Sharon, 1990; Bornstein, 1990; Fahs, Morgan & Kalman, 2003; Lamal, 1990; Schafer, 2001), the actual conduct and reporting of replications in social work appears to be less than optimal. For instance, searching Social Work Abstracts (SWA) during 7/04, using the terms *replicate*, *replicated* and *replication* (connected with the Boolean operator or), produced 343 records (less than 1% of a reported total of over 45,000 records in SWA). Obviously such a search misses some potential replication studies where these words did not appear in the record in the database. Conversely, some of the records in the database likely referred to the need to replicate (rather than referred to an actual replication study). Repeating this search within the subset of 1061 entries for the *Journal of Social Work Education* in SWA resulted in seven records (again less than 1%). Have there been so few findings in social work educational research that are deserving of replication? We would answer no and suggest that there have been negative consequences for social work as a result of this limited conduct or publication of replication studies. Bornstein (1990) summarizes our views succinctly:

The replication process in social science research leaves much to be desired.

Because social scientists historically have published relatively few replication studies, the social sciences have retained many qualities of a "pre-paradigmatic" field . . . Consequently, social science research is perceived by other scientists (and by members of the public) as being less rigorous, less robust, less replicable and less cumulative than research in other branches of science (p. 80).

As this was the second study of the FPSE, it was designed as a direct replication that was as similar to the original study as possible (following Rosenthal's (1990) conception of the replication battery). Given that it is a brief research note, readers interested in additional details

regarding: the Social Cognitive Theory basis of this study; empirical justification for employing the construct self-efficacy in this manner; methodological features such as the retrospective pretest design; as well as specific findings from our and from other investigators work are referred to our prior work (Cuzzi, Holden, Chernack, Rutter, & Rosenberg, 1997; Cuzzi, Holden, Rutter, Rosenberg, & Chernack, 1996; Holden, 1991; Holden, Cuzzi, Rutter, Rosenberg & Chernack, 1996; Holden, Anastas & Meenaghan, 2003; Holden, Barker, Meenaghan, & Rosenberg, 1999; Holden, Cuzzi, Rutter, Chernack & Rosenberg, 1997; Holden, et al., 1997; Holden, Moncher, Schinke & Barker, 1990).

### **Method**

The present study was undertaken to continue development of the FPSE and assess MSW students' changes in self-efficacy with respect to the foundation-level practice competencies.

#### **Participants**

This convenience sample consisted of students in foundation year classes at a large, urban, social work program in the Northeastern U.S. in the 2002-03 academic year (pretest n=279; posttest n=248). All students present in the section on the day of administration (pretest within one month of the beginning and posttest within five weeks of the end of the academic year) were invited to participate. Multiple weeks were required for data collection at both the pretest and posttest, because the lead author collected all of the data, some sections were scheduled simultaneously and some faculty did not want us to collect data on certain class days. In that these were anonymous surveys designed to reassure students of the privacy of their responses, no demographic data were collected.

#### **Measures**

Social Work Empowerment Scale (SWE). Frans' (1993) SWE is a 34 item, self-report measure with preliminary evidence supporting its psychometric properties. Frans' reported Cronbach's alphas of .88 and .89 from two studies. The alpha for the SWE in this study was .88. In terms of validity Frans' also reported that the SWE correlated positively with the Torre empowerment scale ( $r = .58$ ). The SWE's readability estimate is Flesch-Kincaid Grade Level: 6.5. The SWE was only used in the pretest of this study.

Foundation Practice Self-Efficacy (FPSE). The FPSE was developed to provide the profession with a standardized measure capable of assessing attainment of the Foundation year objectives of the new Educational Policy and Accreditation Standards (EPAS). In terms of content validity, the items for the FPSE were written to respond as directly as possible to these EPAS objectives. In Table 1 the EPAS objectives are shown in the first column and the FPSE items are presented in the second column. Multiple items were used to assess four of the more complex objectives. The 31 item FPSE was developed following Bandura's (1997b) suggested approach and has an 11 point response format [ $0 = \textit{cannot do at all}$ ;  $50 = \textit{moderately certain can do}$ ;  $100 = \textit{certain can do}$ ].

The FPSE is written at an appropriate level for social work students. The readability estimate is Flesch-Kincaid Grade Level: 9.5 (c.f., Ley & Florio, 1996). The scale takes approximately 10-15 minutes to complete. The Cronbach's alphas for the FPSE were .97 for the pretest, .96 for the posttest and .97 for the retrospective pretest data). In terms of construct validity, it was predicted (based on SCT and previous research), that the FPSE would have a large positive correlation with the SWE ( $r = .50$ , Cohen, 1988). The observed correlation between these scales at pretest was  $r = .56$ .

Procedure

This study used a single group, pretest-posttest design, which contained a retrospective pretest within the posttest to determine if *response shift bias* was present in the findings (e.g., Howard & Dailey, 1979). As noted above these were anonymous surveys (administered to entire class sections) for which participants created a personal identification number that could only be recognized by themselves, yet allowed the investigators to match responses at the two points in time.

### Results

Examination of the individual component items of the FPSE allows a program to identify those areas of initial student strengths and weaknesses as well as identify those content areas in which larger or smaller amounts of change occurred from the beginning to the end of the foundation curriculum. Descriptive data for the individual items on the FPSE are presented in Table 1. Mean scores for individual items ranged from 39.0 to 80.1. The three highest and three lowest item means are bolded in Table 1. Students reported being most confident in their abilities to practice without discrimination and with respect, knowledge, and skills related to clients':

- ▶ marital status ( $M = 80.1, SD = 19.3$ )
- ▶ gender ( $M = 78.8, SD = 18.3$ )
- ▶ sex ( $M = 78.5, SD = 19.9$ )

Students were *least confident* in their abilities to:

- ▶ formulate social policies ( $M = 39.0, SD = 25.6$ )
- ▶ influence social policy ( $M = 41.4, SD = 26.8$ )
- ▶ analyze social policies ( $M = 50.1, SD = 24.9$ )

[ insert Table 1 about here ]



Students in this sample increased their self-efficacy on all 31 FPSE items from pretest to posttest. The largest pre-post changes were on the items:

- ▶ understand both the history of the social work profession and its contemporary structures and issues, and can use that knowledge effectively in your practice ( $M = 21.9, SD = 24.1$ )
- ▶ use theoretical frameworks supported by empirical evidence to understand individual development and behavior across the life span and the interactions among individuals and between individuals and families, groups, organizations, and communities ( $M = 21.2, SD = 24.0$ )
- ▶ influence social policy ( $M = 21.0, SD = 28.2$ )

Conversely, students showed the smallest pre-post change in their confidence regarding their abilities to practice without discrimination and with respect, knowledge, and skills related to clients':

- ▶ gender ( $M = 3.4, SD = 19.6$ )
- ▶ sex ( $M = 5.1, SD = 19.3$ )
- ▶ marital status ( $M = 5.2, SD = 20.8$ )

The data indicate that response shift bias may have contributed to the results. The mean scores on the retrospective pretest were always lower than the mean scores on the pretest (students were not looking at their pretest ratings when they took the retrospective pretest). The greatest differences for the pretest – retrospective pretest comparisons were for the items:

- ▶ understand the value base of the profession and can practice accordingly ( $M = -14.3, SD = 26.8$ )
- ▶ apply critical thinking skills within the context of professional social work practice ( $M = -14.0, SD = 25.1$ )

- ▶ evaluate your own practice interventions ( $M = -13.3, SD = 28.5$ )
- ▶ family structure ( $M = -13.3, SD = 28.3$ )

Finally, the combined change was calculated. Both types of change are important outcomes in social work education – becoming more confident in one’s abilities and becoming less confident (retrospectively) about capabilities at prior points in time. Combined change is the addition of the absolute values of pre-post and pre- retrospective pretest change. As can be seen in the last column of Table 1, the most combined change occurred for the following items:

- ▶ use theoretical frameworks supported by empirical evidence to understand individual development and behavior across the life span and the interactions among individuals and between individuals and families, groups, organizations, and communities ( $M = 31.6, SD = 20.6$ )
- ▶ understand both the history of the social work profession and its contemporary structures and issues, and can use that knowledge effectively in your practice? ( $M = 30.9, SD = 23.9$ )
- ▶ evaluate your own practice interventions ( $M = 29.8, SD = 22.3$ )

Conversely, the smallest amounts of combined change were observed for the items describing practicing without discrimination and with respect, knowledge and skills related to clients:

- ▶ marital status ( $M = 10.4, SD = 16.1$ )
- ▶ gender ( $M = 11.3, SD = 20.2$ )
- ▶ sex ( $M = 11.6, SD = 15.8$ )

Using the FPSE total scale scores allows a program to examine overall change in the total set of items assessed. Table 2 details the pretest-posttest- retrospective pretest means for the total FPSE and the results of the pretest-posttest, posttest- retrospective pretest and retrospective

pretest-pretest analyses. These analyses were conducted using Wilcoxon signed rank tests, because the three total scale score distributions were not normal (Siegel & Castellan, 1988). An analysiswise alpha level of .05 was used for the three contrasts. A Bonferroni adjustment to maintain this analysiswise alpha level resulted in an alpha level of .01666 for each individual contrast (Cliff, 1987).

[ insert Table 2 about here ]

Each of these three contrasts was statistically significant. Students in the sample increased their self-efficacy regarding foundation practice over the course of the foundation year (whether the actual pretest or the retrospective pretest was used in the analysis). These students also reported that they should have been significantly less confident in their abilities at the beginning of the year (pretest vs. retrospective pretest).

Rosenthal (1990) suggested that one report effect sizes as well as tests of significance in replication reports. For the original study and this replication, the most conservative change estimate (the actual pre-post change) was converted into an effect size estimate - Cohen's  $U_3$  - which is the percentage of scores on the pretest that are exceeded by the median score on the posttest (Cohen, 1988).  $U_3$  ranges from 0-100, with values greater than 50 representing positive change (increase in self-efficacy from pretest to posttest). If  $U_3 = 50$  there would have been no pre-post change. The  $U_3$  for pre-post change was 82.4 for this replication.

[ insert Table 3 about here ]

Table 3 presents the comparable findings (to those in Table 2) from the original study. As can be seen the pretest, posttest and retrospective pretest means and their 95% CIs, as well as the alphas and the Cohen's  $U_3$ s were very similar for the original study and the replication. There were somewhat larger discrepancies for the minimum – maximum scores on the scales. In terms

of construct validity, it was predicted in the original study and the replication that the FPSE would have a large positive correlation ( $r = .50$ ) with the SWE. The actual correlation between these two scales in this replication was  $r = .56$ , which is virtually the same as what was found in the original study ( $r = .57$ ).

## Discussion

This was a direct replication of the original study, designed to provide evidence regarding the reproducibility of those findings. As with the original study, evidence supporting the reliability, validity and sensitivity to change of the FPSE was obtained. The findings in the current study were quite similar to those in the original study. The Cronbach's alphas  $\geq .96$  in both studies, both construct validity estimates ( $r=.57$  and  $r=.56$ , respectively) were similar to each other and the predicted estimate ( $r = .50$ ), and both primary estimates of pre-post change were similar (Cohen's  $U_3 = 80$  and  $87$ , respectively) and both were statistically significant.

Of course these results should be interpreted with caution. They are based on a non-random, convenience sample of social work students, from a single school, at a single point in time, in a single city, using self-report measures, with the data being analyzed and interpreted by a single group of investigators. In addition, single-group, pre-post designs do not allow for strong causal inferences. While this study clearly replicates the findings of the original study, additional, dissimilar replications are needed to test the robustness of these findings (Rosenthal, 1990).

One reviewer suggested that our lack of demographic data was a major shortcoming. We agree that demographic data might be desirable, but would ask at what cost. An emphasis of accreditation and the emphasis of our studies is the question: Does this program produce the intended outcomes overall? Paulhus (1991) has argued compellingly for the reduction of socially desirable responding (response bias) in questionnaire research. Socially desirable responding might occur in a study like the current one at the moment the respondent is about to answer the questions and may be thinking 'faculty might know who I am' (non-anonymous administration) or 'faculty can never know who I am' (anonymous administration). Faculty's role as gatekeepers

(in reality and in some respondents' view) creates the potential pressure for students to answer in biased ways. Given that such occurrences are difficult if not impossible to detect and correct post hoc, Paulhus suggests in part, control of such bias via demand reduction. More specifically, he suggests assuring those who are answering the questionnaire of anonymity. Our group concurs with this view, and while the subgroup analyses allowed by demographic data might be interesting, our view is that they were not worth the trade off. In our view it was more important to design a study that would allow greater confidence regarding its primary hypothesis.

The social work profession needs new and improved approaches to educational outcomes assessment (e.g., Buchan, et al., 2004; Gambrill, 2001b; Garcia & Floyd, 2002). Even if the alternative self-study process becomes popular, it is difficult to imagine that it will be used by all or even a majority of programs. Even if it was used by all programs at some point in time, the need for ongoing program assessment and continuous improvement remains. In addition, some alternative self study projects may want to assess the outcomes of a novel approach to the first year of graduate education and hence, the FPSE would potentially be relevant to the measurement approach.

While there continues to be a paucity of freely available, theoretically based, student focused outcome measures with demonstrably sound psychometric properties the self-efficacy approach described here represents a viable addition to the list of possibilities.

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Table 1. Descriptive data for FPSE (n's = 278 for pretest, 247 for posttest, & 245 for retrospective pretest).

<i>EPAS Foundation Program Objectives</i>	<i>FPSE Item: How confident are you that you can. . . . .</i>	Pretest Mean	SD	Pre-post change	Pre-retro. pretest change	Comb. change
1. Apply critical thinking skills within the context of professional social work practice.	1. apply critical thinking skills within the context of professional social work practice?	64.2	23.1	12.7	<b>-14.0</b>	26.7
2. Understand the value base of the profession and its ethical standards and principles, and practice accordingly.	2. understand the value base of the profession and can practice accordingly?	70.1	21.2	11.0	<b>-14.3</b>	25.3
4. Understand the forms and mechanisms of oppression and discrimination and apply strategies of advocacy and social change that advance social and economic justice.	3. understand the forms and mechanisms of oppression and discrimination and can apply strategies of advocacy and social change that advance social and economic justice?	59.0	23.4	17.4	-5.8	23.2
5. Understand and interpret the history of the social work profession and its contemporary structures and issues.	4. understand both the history of the social work profession and its contemporary structures and issues, and can use that knowledge effectively in your practice?	53.4	24.3	<b>21.9</b>	-9.0	<b>30.9</b>
M6. Apply the knowledge and skills of a generalist social work perspective to practice with systems of all sizes.	5. apply the knowledge and skills of a generalist social work perspective to practice with systems of all sizes?	53.5	23.4	19.8	-9.6	29.4

Table 1. Cont'd.

<i>EPAS Foundation Program Objectives</i>	<i>FPSE Item: How confident are you that you can . . . . .</i>	Pretest Mean	SD	Pre-post change	Pre-retro. pretest change	Comb. change
7. Use theoretical frameworks supported by empirical evidence to understand individual development and behavior across the life span and the interactions among individuals and between individuals and families, groups, organizations, and communities.	6. use theoretical frameworks supported by empirical evidence to understand individual development and behavior across the life span and the interactions among individuals and between individuals and families, groups, organizations, and communities?	54.5	25.1	<b>21.2</b>	-10.3	<b>31.6</b>
8. Analyze, formulate, and influence social policies.	7. analyze social policies?	<b>50.1</b>	24.9	18.3	-6.4	24.7
	8. formulate social policies?	<b>39.0</b>	25.6	19.3	-2.4	21.7
	9. influence social policies?	<b>41.4</b>	26.8	<b>21.0</b>	-.6	21.6
9. Evaluate research studies, apply research findings to practice, and evaluate their own practice interventions.	10. evaluate research studies?	50.3	26.9	20.0	-3.6	23.6
	11. apply research findings to practice?	56.1	24.6	17.8	-6.2	24.0
	12. evaluate your own practice interventions?	60.5	23.5	16.4	<b>-13.3</b>	<b>29.8</b>
10. Use communication skills differentially across client populations, colleagues, and communities.	13. use communication skills differentially across client populations, colleagues, and communities?	66.8	22.1	13.4	-12.0	25.4

Table 1 Cont'd.

<i>EPAS Foundation Program Objectives</i>	<i>FPSE Item: How confident are you that you can . . . . .</i>	Pretest Mean	SD	Pre-post change	Pre-retro. pretest change	Comb. change
11. Use supervision and consultation appropriate to social work practice.	14. use supervision appropriately in your social work practice?	72.5	21.4	9.6	-13.2	22.8
	15. use consultation appropriately in your social work practice?	69.4	22.3	9.1	-13.1	22.2
12. Function within the structure of organizations and service delivery systems and seek necessary organizational change.	16. function effectively within the structure of organizations and service delivery systems?	67.0	22.4	12.6	-9.4	22.0
	17. effectively seek necessary organizational change within organizations and service delivery systems?	55.1	23.8	18.5	-4.5	23.0

Table 1 Cont'd.

<i>EPAS Foundation Program Objectives</i>	<i>How confident are you that you can practice without discrimination and with respect, knowledge, and skills related to clients'. . . .</i>	Pretest Mean	SD	Pre-post change	Pre-retro. pretest change	Comb. change
3. Practice without discrimination and with respect, knowledge, and skills related to clients' age, class, color, culture, disability, ethnicity, family structure, gender, marital status, national origin, race, religion, sex, and sexual orientation.	18. age?	75.3	18.4	5.8	-8.6	14.4
	19. class?	73.6	19.8	9.5	-6.6	16.1
	20. color?	74.4	20.5	9.6	-4.6	14.2
	21. culture?	71.9	20.7	11.1	-5.1	16.2
	22. disability?	70.9	22.3	9.1	-5.7	14.8
	23. ethnicity?	73.0	21.4	10.3	-3.4	13.7
	24. family structure?	76.5	19.4	5.4	<b>-13.3</b>	18.7
	25. gender?	<b>78.8</b>	18.3	<b>3.4</b>	-7.9	<b>11.3</b>
26. marital status?	<b>80.1</b>	19.3	<b>5.2</b>	-5.2	<b>10.4</b>	12.5
27. national origin?	75.3	26.2	7.3	-5.2	12.5	14.4
28. race?	75.4	20.1	9.3	-5.1	14.4	

EPAS Foundation Program Objectives	How confident are you that you can practice without discrimination and with respect, knowledge, and skills related to clients' . . . . .	Pretest Mean	SD	Pre-post change	Pre-retro. pretest change	Comb. change
	29. religion?	73.5	20.7	9.3	-4.3	13.6
	30. sex?	<b>78.5</b>	19.9	<b>5.1</b>	-6.5	<b>11.6</b>
	31. sexual orientation?	75.4	22.2	7.0	-7.0	14.0

Note. Higher scores indicate higher levels of self-efficacy. The n's were 278, 247 and 245 for pretest, posttest and retrospective pretest respectively, although missing data or inability to match a participants pretest and posttest scores reduced the n's for some comparisons.



Table 2. FPSE total scale descriptive and outcome statistics.

FPSE	Pretest	Posttest	Retro. pretest
Mean	66.1	78.7 <sup>1</sup>	58.7 <sup>2</sup>
95% CI	64.0-68.2	77.3-80.1	56.3-61.0
Min. – Max.	12.9-96.8	41.9-98.4	7.4-92.9
Cronbach's alpha	.97	.96	.97
Cohen's U <sub>3</sub> (pretest-posttest effect size estimate)	--	82.4	--

Note. Higher scores indicate higher levels of self-efficacy. The n's were 278, 247 and 245 for pretest, posttest and retrospective pretest change respectively, although missing data or inability to match a participants pretest and posttest scores reduced the n's for some comparisons.

<sup>1</sup> Significant pretest vs. posttest comparison,  $p < .01666$  (2 tailed), Wilcoxon signed rank test,  $n = 220$ .

<sup>2</sup> Significant retrospective pretest vs. posttest comparison,  $p < .01666$  (2 tailed), Wilcoxon signed rank test,  $n = 245$ . Significant retrospective pretest vs. pretest comparison,  $p < .01666$  (2 tailed), Wilcoxon signed rank test,  $n = 219$ .

Table 3. FPSE total scale descriptive and outcome statistics from the original study.

FPSE	Pretest	Posttest	Retro. pretest
<i>M</i>	65.8	77.8 <sup>1</sup>	58.6 <sup>2</sup>
95% CI	63.8–67.8	76.1–79.4	56.4–60.9
Min.–Max.	11.3–99.7	14.7–100	11.3–100
Cronbach's alpha <sup>1</sup>	.97	.96	.97
Cohen's U <sub>3</sub> <sup>2</sup>	--	80	--

Note. Total  $N= 260, 229$ , for pretest and posttest respectively, although missing data or inability to match a participants pretest and posttest scores reduced the  $n$ 's for some comparisons.

<sup>1</sup> Significant pretest versus posttest comparison,  $p<.01666$  (2 tailed), Wilcoxon signed rank test,  $n=190$ .

<sup>2</sup> Significant retrospective pretest versus posttest comparison,  $p<.01666$  (2 tailed), Wilcoxon signed rank test,  $n=229$ . Significant retrospective pretest versus pretest comparison,  $p<.01666$  (2 tailed), Wilcoxon signed rank test,  $n=188$