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Research Note

Psychometric Verification of Perry's Public Service Motivation Instrument

Results for Volunteer Exemplars

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This research note reports a confirmatory factor analysis for three of Perry's (1996) public service motivation (PSM) subdimensions: self-sacrifice, commitment to public interest, and compassion. A mail survey of national award-winning volunteers constitutes the sample. Results indicate strong support for Perry's instrument, most noticeably better results for self-sacrifice than those found in Perry's original exploratory work. Implications and recommendations for PSM instrument development are discussed.

Keywords: motivation; public service ethic; personnel; volunteerism; structural equation modeling; confirmatory factor analysis

Public service motivation (PSM) or sometimes referred to as public service ethic, has developed a significant body of literature in recent years (e.g., Brewer & Selden, 1998; Brewer, Selden, & Facer, 2000; Crewson, 1995, 1997; Houston, 2000; Perry, 1996, 1997, 2000; Scott & Pandey, 2005). Perry and Wise (1990), who began the effort to designate the construct, defined it as "an individual's predisposition to respond to motives grounded primarily or uniquely in public institutions and organizations" (p. 368).

This groundswell of literature, however, suffers a significant problem: There is virtually no work on the formal measurement of PSM. Perry (1996) initially attempted to develop a scale and proposed, based on an exploratory result, a 24-item scale with four

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79

subdimensions. Since his analysis using some of the measures in various forms (with the exception of Coursey and Pandey, 2003), there has not been a formal confirmatory factor analysis study of Perry's exploratory result.[1] However, Coursey and Pandey (2003) excluded the self-sacrifice subdimension on the basis that Perry's overall fit measures with and without the subdimension were very similar, and the three-dimension scale was a better theoretical fit to other motivation literature (c.f. Knoke & Wright-Isak, 1982). Yet, self-sacrifice is clearly a dominant theme in public administration PSM discussions (Brewer & Selden, 1998; Brewer et al., 2000; Crewson, 1997; Houston, 2000).

This research note provides a formal, confirmatory factor analysis for three of Perry's (1996) PSM subdimensions: commitment, compassion, and self-sacrifice. It provides an important complement to Coursey and Pandey's (2003) work by testing self-sacrifice. Additionally, this study uses a very different sampling frame from previous work: volunteer exemplars from the Daily Point of Light Awards (DPOL) and the President's Community Volunteer Awards (PCV). This helps test the applicability of the presumed dimensional structure to a very different sample from those used in Perry (1996) and Coursey and Pandey (2003). For those interested in a more detailed review of these various studies to date and relevant theory, we suggest Perry, Brudney, Coursey, and Littlepage (in press).

Data Collection

A mail survey of national award-winning volunteers constitutes the sample. The sample consists of winners of the Daily Point of Light (DPOL) awards and the President's Community Volunteer (PCV) awards, awarded on behalf of the president of the United States. The DPOL awards honor individuals and volunteer groups committed to connecting Americans through service and helping meet critical needs in their communities. Each weekday, one volunteer or volunteer effort in the country receives a DPOL. The awards are given to those finding innovative ways to meet community needs—efforts often leading to long-term solutions to social problems in their local communities. Now called the President's Volunteer Service Award, it is the nation's highest honor for volunteerism. It recognizes outstanding individuals, families, groups, organizations, businesses, and labor unions engaged in community services that address unmet human service, educational, environmental, and public safety needs. The president of the United States traditionally presents these awards at a White House ceremony to signify and symbolize their importance.

A survey instrument was developed in several stages, using a short version of Perry's (1996) PSM scale as well as multiple sources for measures for religiosity, voluntarism, motivations to volunteer, and family influences related to other planned research. Because the primary purpose of data collection was the role of faith in volunteering, an advisory board of clergy was convened to review and comment on the draft survey instrument. After incorporating the advisory group's input into the survey instrument

and complying with Institutional Review Board human participants' procedures, the first mailing occurred in January 2004 with a follow-up mailing a month later. A total of 1,456 from the DPOL and 79 from the PCV (1998 to 2001) were selected for the sample frame. Although it is possible for someone to get both awards, we did not overlap the samples (i.e., one survey to a participant regardless of whether they won both). Of those mailed, 137 were undeliverable, six of the participants were deceased, and six asked to not be contacted. Our total useable response rate was 37% (516 surveys returned from 1,386 possible). A subset of these was chosen for personal interviews as well.

To ensure that the respondents were representative of all award winners, two available indicators were examined: percentage of respondents by state, compared to all winners, and percentage of respondents by year of award, compared to all winners. The respondents were widely distributed and not overly represented by any one state. As might be expected, there was a higher percentage of respondents from recent years, but not dramatically higher.

Additionally, we wanted to see how these volunteers compared to volunteers in general; therefore, the sample was compared to the 2003 Current Population Survey supplement on volunteering conducted by the Bureau of Labor Statistics. As Table 1 illustrates, in many ways (gender, income, and race) the award winners are similar to the mail survey and interview subsample (note: the interview data is not part of this analysis). Where there are differences, the award winners appear to be more highly educated, more likely to be retired, and over age 60. The age and employment status differences make sense because a group of award recipients is generally expected to have more experience with the activity and likely to have more free time to volunteer and fewer family commitments, so we could expect the group to be older and at a different stage in life compared with the typical volunteer. Another likely difference is the amount of time devoted to volunteering—award winners report on average 251 hrs per year, almost twice as much as the reported average for the more typical volunteer of 137 hrs per year.

Measures and Method

Twelve items from Perry's (1996) 24-item scale derived from the self-sacrifice, compassion, and commitment subdimensions were selected for analysis based on previous results and face validity of the items (see Appendix). Obviously, selection of which items to include is somewhat subjective but inevitable toward the goal of a shorter, more administrable instrument. For this analysis, we chose items based on their relative performance in Perry's work (e.g., lambda weights, reliability evidence), and the final list was reviewed by scholars actively engaged in PSM measurement studies. Fewer items in the various subscales may produce a less reliable overall scale, but such is the sacrifice of a shorter instrument. The question, of

Table 1
A Comparison of Demographic Characteristics of Award
Winners to All Volunteers and Interviewees

	Interviewees (n = 26)	Survey Respondents (n = 525)	Current Population Survey Volunteers
Gender			
Male	58%	42%	41%
Female	42%	58%	59%
Education			
Some high school or degree or general equivalency diploma	8%	10%	33%
Some college but less than bachelor's	35%	32%	29%
4-year degree or higher	57%	58%	38%
Employment status			
Employed	58%	56%	67%
Retired	31%	29%	14%
Full-time student, unemployed, other	11%	15%	19%
Household income ($)			
Less than 20,000	4%	11%	11%
20,000 to 39,999	24%	19%	21%
40,000 to 59,999	12%	20%	21%
60,000 or more	60%	50%	47%
Age			
0 to 24	12%	12%	14%
25 to 59	40%	47%	66%
60+	48%	41%	20%
Volunteering hours			
Informal	139.2	134.6	N/A
Formal	260.4	251.3	137.2

course, is whether it performs well enough in terms of various quality measures. As Perry's conceptualization of PSM is reflective, that is, constructed of shared variance as the latent subdimensions expected to cause the values in the observed items—or in other words, the items reflect variance in the subdimensions—exclusion of an item does not endanger the conceptual definition of a dimension.[2]

Items were subjected to a second-order reflective confirmatory factor analysis (CFA) using diagonally weighted least squares (DWLS) estimation (given the Likert, ordinal items) using LISREL 8.73. Figure 1 provides the theoretical model. Alternative parameterization was deployed (given that all the measures are on the same Likert scale), which assumes the differences in item distributions may reflect differences in the mean or variance of the underlying latent variable (Jöreskog, 2001). Missing data is also an issue in CFA, as it can cause estimation errors as well. In using the covariance matrix, CFA requires listwise deletion; therefore, a single, missing value on an indicator for a case is particularly damaging to effective sample size. A few variables in the survey

Figure 1
***T*-Values for Paths of Overall Model**
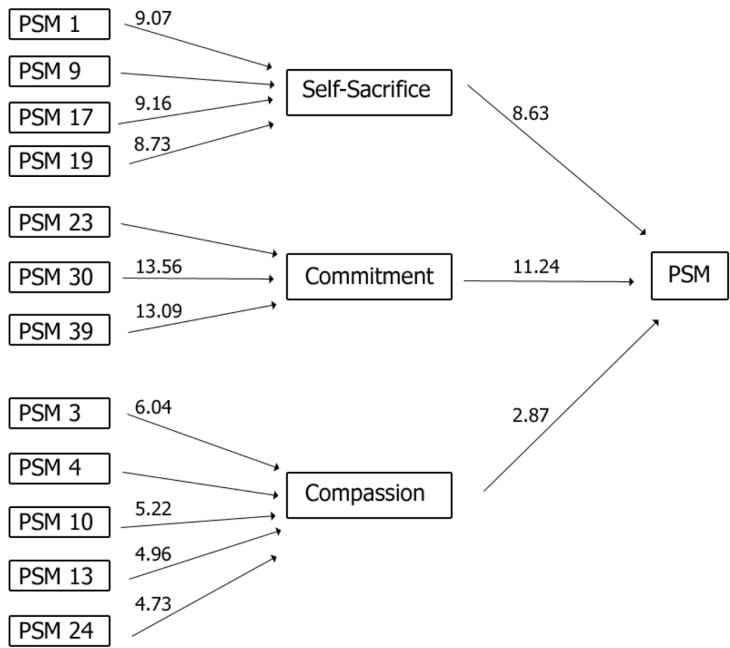
Note: PSM 9, 23, and 4 are fixed paths to Lambdas of "1" for scaling and model identification purposes.
Sample size = 456.

have missing data rates of approximately 8% to 10%. A variety of quite sophisticated techniques exists to adjust for missing data bias in CFA, with full information maximum likelihood (FMIL) likely the best alternative. However, given the ordinal nature of the indicators, FMIL was not usable. Instead, the expectation maximization algorithm was used, generating estimated values through a series of Markov chains around the covariance matrix of the entire set of indicators used in the analysis (for mathematical details, see Toit & Toit, 2001, pp. 387–388).

Results

The first question is whether the model is a good fit to the data. Table 2 provides a variety of common overall fit measures with comparisons to results from Perry

Table 2
Model Fit Indicators for Diagonally Weighted Least Squares (DWLS)
Analysis and Perry's (1996) Four-Dimension and Coursey/Pandey's (2003)
Three-Dimension Scales

	RMSEA (90% confidence interval)	χ^2 (p-value; df)	GFI	AGFI	NFI	IFI	CFI
DWLS	0.060 (0.048-.072)	133.84 (0.00; 51)	0.98	0.97	0.97	0.98	0.98
Perry	—	596.15 (0.00; 246)	0.88	0.86	0.84	—	—
Coursey/Pandey	0.068 (0.047 to 0.089)	72.15 (0.00; 32)	0.97	0.95	0.91	0.95	0.95

Note: RMSEA = root mean square error of approximation; GFI = goodness-of-fit index; AGFI = adjusted goodness-of-fit index; NFI = normed fit index; IFI = incremental fit index; CFI = comparative fit index.

(1996) and Coursey and Pandey (2003). The results suggest a strong model fit, with a root mean square error of approximation of 0.06 and the goodness-of-fit index, adjusted goodness-of-fit index, normed fit index, incremental fit index, and comparative fit index all 0.97 or better.[3] The significant χ^2 value suggests poor model fit, but the statistic is known to be highly sensitive to sample size and not the best measure of model fit (it is still routinely included in CFA work for purposes of comparing alternative models via χ^2 changes). Findings are very comparable to Coursey and Pandey's (2003) three-dimension scale using DWLS and better than Perry's four-dimension model utilizing maximum likelihood.

The next concerns are how well the items relate to the subdimensions (validity) and how well the model accounts for their variances (reliability). Table 3 presents the standardized lambdas, t-values, and R^2 results. Figure 1 provides the t-values for the estimated paths for the model. All the paths between the items and subdimensions are highly statistically significant. The paths between the overall PSM construct and the subdimensions (gamma) are also highly significant (Figure 1). Reliabilities are solid for the self-sacrifice and commitment subdimensions, with every item 0.35 or better in R^2. Compassion, however, has somewhat weaker results, especially PSM 24, which is only 0.06.

How well do these results compare to previous PSM studies? Table 4 displays comparable lambdas and R^2 values across the studies. The self-sacrifice is noticeably better that in the Perry (1996) study, perhaps partly because of the more appropriate DWLS technique. Results for commitment are quite similar. Findings for compassion suggest much stronger reliability for PSM 4 and PSM 13 than in the previous studies, whereas PSM 24 has almost the same low reliability as Coursey and Pandey (2003). The arguably better-performing shorter scale in terms of overall fit is perhaps a bit surprising given that fewer items are used. A shorter scale often involves such

Table 3
Diagonally Weighted Least Squares Estimates Corrected Based on
Alternative Parameterization

	Lambda (*SE*)	*t*-Value	R^2
Self-sacrifice			
PSM 1	1.12 (0.12)	9.07	.44
PSM 9	1.05 (—)	—	.35
PSM 17	0.96 (0.10)	9.16	.51
PSM 19	1.16 (0.13)	8.73	.36
Commitment to public			
interest/civic duty			
PSM 23	1.11 (—)	—	.41
PSM 30	3.48 (0.26)	13.56	.63
PSM 39	3.28 (0.25)	13.09	.41
Compassion			
PSM 3	0.96 (0.16)	6.04	.28
PSM 4	1.35 (—)	—	.38
PSM 10	0.70 (0.13)	5.22	.20
PSM 13	3.56 (0.72)	4.96	.71
PSM 24	0.45 (0.09)	4.71	.06

Note: PSM = public service motivation.

a tradeoff and would be a concern. Here the opposite happens. This is, perhaps partially, caused by a more appropriate mathematical treatment. It could also be caused by model trimming, because the shorter scale stressed better performing items from the previous study. This is an advantage. Much of measurement work is toward scale improvement via additional studies modifying item sets. It is also critical to remember the Perry scale as tested was only exploratory, because it was derived from a rejected initial test of a much larger instrument on the same data set.

Finally, it is standard to consider modifications to the tested model toward better data fit. Such work was used to generate Perry's (1996) scale. The goal is to consider different items and dimensional structures and exclusions or inclusions toward a better instrument. For example, perhaps an item does not discriminate well between dimensions? This would suggest deleting the item. The approach is similar to theory trimming (Pedhauzer, 1982) or stepwise regression building (Kelloway, 1998).

Such work is subjective, though guided by standard considerations.[4] Lagrange multiplier tests (or modification indexes/scores) are calculated measuring changes in the model χ^2 by presuming items are scored on additional dimensions. Items with comparatively high scores (usually above five with some consideration of the overall, initial model χ^2 value) suggest concern. For example, if one of the self-sacrifice

Table 4
Standardized Estimates of Lambda and R^2 Values from Perry (1996)
and Completely Standardized Estimates From
Coursey/Pandey (2003) and Current Study

	Lambda			R^2		
	Current	Perry	Coursey/Pandey	Current	Perry	Coursey/Pandey
Self-sacrifice						
PSM 1	0.59	0.55	—	0.44	0.30	—
PSM 9	0.60	0.54	—	0.35	0.29	—
PSM 17	0.67	0.54	—	0.51	0.29	—
PSM 19	0.71	0.48	—	0.36	0.23	—
Commitment to public interest/civic duty						
PSM 23	0.64	0.55	0.57	0.41	0.31	0.32
PSM 30	0.79	0.78	0.94	0.63	0.60	0.88
PSM 39	0.64	0.68	0.66	0.41	0.47	0.44
Compassion						
PSM 3	0.53	0.44	—	0.28	0.19	—
PSM 4	0.61	0.39	0.27	0.38	0.15	0.07
PSM 10	0.45	0.54	—	0.20	0.29	—
PSM 13	0.84	0.46	0.50	0.71	0.21	0.25
PSM 24	0.25	0.57	0.57	0.06	0.32	0.07

Note: PSM = public service motivation.

items has high scores for the other dimensions, this would imply it does not discriminate well, and deleting the item would improve model fit. Any changes, however, must be cognizant of a scale's theoretical foundation. Modification scores suggest possible changes, but a researcher should carefully review the nature of an item and how it relates to other measures and dimensions before deleting it.

Modification indexes were calculated for the DWLS results. Four scores above 5 were found (PSM 1 on PSM 23 = 14.8, PSM 30 on PSM 19 = 13.8, PSM 3 on PSM 19 = 8.6, and PSM 3 on PSM 23 = 10.6) but all on item-to-item across subdimensions. The scores indicate PSM 3 and PSM 19 might be linked to two items from two different dimensions, which suggests they may not discriminate well. However, neither has any nonzero scores to other outside subdimension items, nor any nonzero modification score to the other subdimensions themselves. Still, a nested analysis deleting PSM 3 and PSM 19 was calculated and overall fit measures are provided in Table 5. The fit is statistically better for the χ^2 (60.88 with $df = 19$; $p < .001$), but χ^2 is still highly significant, and the other fit measures are not markedly improved, which is not surprising because the initial model demonstrated very solid overall model fit. The conclusion is deletion of PSM 3 and 19 does not significantly change

Table 5
Model Fit Indicators Nested Analysis Deleting PSM 19 and PSM 3

	RMSEA (90% CI)	χ^2 (*p* value; *df*)	GFI	AGFI	NFI	IFI	CFI
DWLS	0.053 (0.037; 0.069)	72.92 (0.00; 32)	0.98	0.97	0.97	0.98	0.98

Note: PSM = public service motivation; RMSEA = root mean square error of approximation; GFI = goodness-of-fit index; AGFI = adjusted goodness-of-fit index; NFI = normed fit index; IFI = incremental fit index; CFI = comparative fit index.

the model and the items should receive continued examination in future PSM scale development.

Discussion

This study sought to test the validity and reliability of Perry's (1996) PSM scale as a three-dimension version including self-sacrifice but excluding public policy making. Results suggest similar validity and reliability to findings of Coursey and Pandey (2003) for the commitment subdimension. Given the very different sample frame, the findings strongly support the generalizability of the subdimension and its items.

Self-sacrifice results are somewhat better than Perry's (1996) initial study, and some of the compassion items are noticeably better than both previous studies. Compassion has been problematic in terms of reliability in previous studies. Here, only the PSM 24 item is considerably low (0.06). The reason may very well be the sampling frames. Coursey and Pandey (2003) used state health workers who, by the nature of their professionalization, may not identify with compassion as much either because of professionalization or developing indifference to clients as a coping mechanism given the nature of their work (c.f. Lipsky, 1980). Perry's sample frame was quite diverse, including MPA/public affairs and social work students, business executives, and state and city government employees, among others. Here, the sample frame is exemplary volunteers where compassion and self-sacrifice are likely far greater components of PSM and so the reliabilities are noticeably greater. Hence, the dimension may simply be more salient. The results suggest that problems with item reliability in the two previous studies may be an artifact of their sampling frames. What is interesting, however, is even though the three studies to date use vastly different sample frames, the validity findings and overall model fit results are supportive of the proposed structure. There is no clear variance in the dimensional structure, only possible variance in the saliency of the subdimensions, which is reasonably expected under theory.

Conclusion and Recommendations

Results for the three-dimension model including self-sacrifice provide further support for Perry's (1996) PSM scale. Particularly important is that this study verified the measures with a very different sample frame than previous studies used. Like Coursey and Pandey's (2003), this work is one of two confirmatory factor analyses of Perry's scale and unlike the Coursey and Pandey study, includes self-sacrifice.

It is also important that the compassion items, with the exception of PSM 24, performed better than in Coursey and Pandey (2003) and for every item but PSM 10 and PSM 24 in terms of reliability to Perry's (1996) findings. This suggests that although these items have been significant in all their studies (the lambda coefficients), the low reliabilities may be attributable to their sample frames. Therefore, the findings suggest the items may be better than previously thought.

From here, researchers should continue proposing and testing new items. It is particularly important that future research test a four-dimensional structure, because it has still not received a follow-up confirmatory factor analysis to Perry's (1996) exploratory results. Here, attraction to public policy making was excluded, given the nature of the sample and current scale items being deemed less applicable in a shortened instrument. However, public policy making continues to be a challenging area to tap, especially in discriminating participants' distaste for politicians versus professional rule making and administration, and a seeming acceptance, or at least the desire for, the traditional "politics versus administration" dichotomy. Researchers should continue to test the stability of the PSM structure with varied samples. For example, a sample of mostly private-sector employees would be a nice complement to current work.

For researchers interested in using the derived three-dimension structure from this study, it is important to properly model it. It is not advisable to cite this work and then sum the measures as an index or produce factor scores from principal component analyses. That is not the tested model. The PSM construct is reflective, not formative, and the studies to date have not tested such a formative specification. Programs such as LISREL may be used to generate a factor score for PSM based on the reflective dimensional structure, whether for the overall construct or for its subdimensions.

Appendix
Public Service Motivation (PSM) Items by Dimensions

Dimension	Perry (1996) Designation
Self-sacrifice	
Making a difference in society means more to me than personal achievements.	PSM 1
Much of what I do is for a cause bigger than myself.	PSM 9

(continued)

Appendix (continued)

Dimension	Perry (1996) Designation
I think people should give back to society more than they get from it.	PSM 17
I am one of those rare people who would risk personal loss to help someone else.	PSM 19
Commitment to public interest/civic duty	
I unselfishly contribute to my community.	PSM 23
Meaningful public service is very important to me.	PSM 30
I consider public service my civic duty.	PSM 39
Compassion	
Most social programs are too vital to do without.	PSM 3
It is difficult for me to contain my feelings when I see people in distress.	PSM 4
I seldom think about the welfare of people I don't know personally. (R)	PSM 10
I am often reminded by daily events about how dependent we are on one another.	PSM 13
I have little compassion for people in need who are unwilling to take the first step to help themselves. (R)	PSM 24

Note: (R) = Reverse worded.

Notes

1. Brewer and colleagues (2000) utilized q-methodology to examine Perry's (1996) items. Though not a confirmatory factor analysis, it provided general support for the construct, albeit with differently defined subdimensions.

2. This is markedly different from indexes, or formative conceptualizations, where items are presumed to add up to produce a concept. Here, the causal path is opposite of reflective, and exclusion of an item redefines a latent dimension.

3. Values above 0.90 are considered good, and above 0.95 excellent model fit. For root mean square error of approximation, values below 0.10 are good, and below .05 excellent.

4. Kelloway (1998) has a good overview of interpreting modification indexes from LISREL printout.

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