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# Development of an Occupational Embeddedness Measure

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## Abstract

### Purpose

The purpose of this paper is to develop a measure of occupational embeddedness.

### Design/methodology/approach

The construct of occupational embeddedness was defined in terms of the forces that bind people to their occupation. Then a four-part study was conducted to develop a measure of it.

## Findings

In Part 1, items were developed and judgmental evidence for their content validity was generated. In Part 2 the initial psychometric characteristics were examined. The results supported the internal consistency reliability and factor structure of the measure. In Part 3, Part 2 was replicated and showed that occupational embeddedness had a negative relationship to occupational withdrawal intentions. In Part 4 a confirmatory factor analysis was conducted to demonstrate that occupational embeddedness was distinguishable from occupational commitment. The paper also found that occupational embeddedness was correlated with occupational commitment but not social desirability. In addition, the paper found that it accounted for incremental variance in occupational withdrawal intentions beyond occupational commitment.

## Research limitations/implications

Limitations include the fact that occupational withdrawal intentions rather than actual behaviors were measured. Overall, the results suggest that the new measure has sound psychometric qualities, and adequate discriminant, convergent and predictive validity. The paper concludes that use of the measure may contribute to the prediction/understanding of career withdrawal.

## Originality/value

A new measure of a construct that may be used to complement existing research and measures of work-role attachment was developed.

## Keywords

Occupational psychology, Job satisfaction, Employee turnover

Researchers in the area of human resources, industrial/organizational psychology and organizational behavior have shown considerable interest in understanding workers' attachment to the work-role. Much of this work has focused on the topic of commitment (see reviews by Cohen, 2003; Cooper-Hakim and Viswesvaran, 2005; Meyer and Herscovitch, 2001; Morrow, 1983). While there are many definitions of commitment, Meyer and Herscovitch (2001) suggest that the essence of commitment is a "force that binds individuals to a course of action of relevance to a particular target" (p. 301). Within the literature on commitment several broad "targets" or aspects of the work-role that workers commit to have been identified. These include the worker's job (Lodahl and Kejner, 1965), work (Kanungo, 1982), organization (Meyer and Allen, 1991) and career/occupation (Blau, 1985; Carson and Bedeian, 1994; Snape and Redman, 2003). Several "bases" or dimensions of commitment have also been identified. Most recent studies have commonly followed Meyer and Allen's (1991, 1997) typology that includes affective, normative and continuance bases of commitment. This line of research has provided a vast and informative literature regarding some of the antecedents and outcomes of job involvement (Brown, 1996; Diefendorff *et al.*, 2002), organizational commitment (Mathieu and Zajac, 1990; Riketta, 2002, 2008) and career/occupational commitment (Ballout, 2009; Blau, 2009; Briscoe and Finkelstein, 2009; Lee *et al.*, 2000).

Focusing on the organization and job as a target, Mitchell *et al.* (2001) noted three important issues within the literature on commitment. First they noted that most of these various forms of commitment have a strong affective component. Second they noted that traditional measures of commitment leave a great deal of variance in important outcomes (e.g. turnover) unexplained. Third, they noted that factors both within and outside of the workplace help determine attachment. In response to these observations they introduced the concept of job embeddedness. It was intended to represent a broader and less affectively loaded array of dimensions that attach or bind people to their jobs (Yao *et al.*, 2004). Since its introduction, job embeddedness has stimulated considerable research. For instance, the original measure of it has been refined (Lee *et al.*, 2004) and new measures of it have been developed (Crossley *et al.*, 2007). Research using this construct has shown its

relationship to performance (Sekiguchi *et al.*, 2008) and to turnover (Crossley *et al.*, 2007; Lee *et al.*, 2004) in cross-national (Tanova and Holtom, 2008) and ethnically diverse samples (Mallol *et al.*, 2007). It has also been used in regard to newcomer socialization (Allen, 2006) and older workers' willingness to accept relocation (Mignonac, 2008).

A similar set of issues to those originally noted in the organizational and job commitment literature by Mitchell *et al.* (2001) also apply to the literature in the area of occupational commitment. Namely, measures that tend to be affectively loaded, significant amounts of variance in outcomes such as occupational withdrawal being left unexplained by commitment, and that factors outside of the workplace relate to occupational attachment. Building on the notion of job embeddedness, Feldman and colleagues argued that people become embedded in their careers (Feldman, 2007) or occupations (Ng and Feldman, 2007) as well. Specifically, they described occupational embeddedness as the “forces that keep people in their present occupations” (Feldman and Ng, 2007, p. 353) and called for the development of a measure of it (Ng and Feldman, 2007). The construct of occupational embeddedness may help address issues identified in the occupational commitment literature (e.g. affectively loaded measures, considerable unexplained variance, and external factors that may influence occupational behavior).

Recognizing the potential importance of the concept of occupational embeddedness and the need for a measure of it, the purpose of this study was to develop an instrument to measure occupational embeddedness, which we call the Occupational Embeddedness Survey (OES). This measure is intended to complement existing research on workers' attachment to the occupational component of the work-role. In the section that immediately follows we define occupational embeddedness and describe its major subdimensions. We discuss the features occupational embeddedness has in common with other bases/targets of attachment such as the various types of occupational commitment, and also distinguish it from them. After this we present the results of a four-part study aimed at developing a measure of it.

## The construct of occupational embeddedness

An occupation can be defined as “an identifiable and specific line of work that an individual engages in to earn a living” that includes a “constellation of requisite skills, knowledge, and duties that differentiate it from other occupations” (Lee *et al.*, 2000; p. 800). Consistent with Feldman (2007) and Feldman and Ng (2007) we define occupational embeddedness as a set of forces that bind individuals to their occupations. These forces can arise from within the occupation itself and also from outside of the occupation. We use the term internal embeddedness to refer to those forces arising from within the occupation itself that bind individuals to their occupations. We use the term external embeddedness to refer to those forces outside of the occupation that bind individuals to their occupations. These external forces include family and community. We use the term community in a broad sense to refer to tangible aspects of communities such as facilities (i.e. schools, shopping, religious associations), professional services (i.e. doctors, dentists, political organizations), and leisure activities (i.e. theater, sports affiliations, museums) (Sanders, 1966) as well as psychological aspects of communities such as shared interests and values (Warren, 1973).

Like job embeddedness (Mitchell *et al.*, 2001), the specific forces that bind people to their occupations include links, fit, and sacrifice. The links dimension refers to the connections individuals have with other people and institutions. Examples of links internal to the occupation include occupational colleagues and contacts, customers, and membership in occupational associations. Examples of links external to the occupation include family and friends in the community. Fit represents the compatibility individuals have with their current occupation internally and externally. Examples internal to the occupation are individuals' compatibility with the knowledge, skills, abilities, work styles and values of the occupation. Feldman (2007) described fit external to the occupation in terms of “value-fit” and “lifestyle-fit.” Value-fit represents the compatibility between

individuals, and the values of their community (e.g. religious climates, political affiliations, and cultural norms). Lifestyle-fit represents the congruence between an individual and the mix of features the community has to offer (e.g. outdoor activities, colleges, and various entertainment outlets). Sacrifice represents the loss of accumulated tangible and psychological investments that would be forfeited if individuals left their occupation. With regard to investments internal to the occupation, these may include work status and prestige, pay and benefits, as well as already acquired education and training. External to the occupation are those losses that would occur if it were necessary to relocate from one community to another. These might include leaving one's community-based clubs, places of worship, hobbies, friends and extended family members. These may also include changing schools and jobs for family members if the individual has a family.

Occupational embeddedness can be distinguished from job embeddedness in that the internal links, fit and sacrifice are distinctly framed in terms of one's occupation rather than one's job or organization. That is, the target of occupational embeddedness is different than that of job embeddedness. Occupational embeddedness is similar to other forms of work-role attachment, but it is also conceptually distinct from them in that its bases differ from those found in traditional forms of commitment (e.g. Allen and Meyer, 1990; Blau and Holladay, 2006). Affective commitment reflects strong emotional ties to, as well as identification with, an organization or occupation. Occupational embeddedness is not necessarily based on strong emotions regarding the target. Normative commitment is a belief that one should remain a member of an organization or occupation because one feels a sense of moral obligation to do so. Occupational embeddedness does not have this sense of moral obligation as one of its bases. Continuance commitment is the accumulated benefits of staying with an organization or occupation weighed against the cost of leaving. Occupational embeddedness is similar to continuance commitment via the sacrifice element of occupational embeddedness. However, it is intentionally broader in that it also recognizes links and perceived fit with one's occupation. In addition, unlike these other measures, occupational embeddedness explicitly recognizes the external environment through its external subcomponent. Finally, occupational embeddedness differs from the lack of alternatives dimension of commitment noted in the occupational commitment literature (see Blau and Holladay, 2006; Carson *et al.*, 1995) in that its external subcomponent does not focus on perceived alternatives.

In summary, occupational embeddedness is a collection of forces that bind people to their occupations. These forces arise from the links, fit and sacrifices an individual has both internal and external to the occupation. Thus we expect occupational embeddedness to have a two dimensional structure reflecting internal embeddedness and external embeddedness. In addition, while it shares some common features with commonly identified bases of attachment, it is also conceptually distinct from them.

## Part 1: item generation

The first task was to develop an initial item pool for the new occupational embeddedness construct. The items were developed based on previous theoretical definitions of links, fit and sacrifice that arise internal and external to the occupation (Ng and Feldman, 2007) and by reviewing existing items from similar measures (e.g. Carson *et al.*, 1995; Lee *et al.*, 2004). An initial set of 20 such items were generated. When developing a new scale it is essential that a connection be established between items and their theoretical domain (Clark and Watson, 1995; Hinkin, 1995). During item generation we purposefully did not include those items that reflected age or occupational tenure. While those items may be correlates of the new occupational embeddedness measure they are poor proxies for the underlying construct, and are at best confounded with it. We also intentionally avoided asking questions about spouses and children because in some employment contexts such items may be inappropriate.

The second task was to demonstrate evidence for content validity. Descriptions of links, fit and sacrifice as well as our definitions of internal and external occupational embeddedness were administered independently to

three judges who had training in industrial/organizational psychology. The judges sorted each item into one of three categories: internal occupational embeddedness, external occupational embeddedness and other. The “other” category was included to provide the judges the option to discard an item if it was not relevant to the two dimensions. Any item that was not agreed upon by all judges was discarded. This resulted in a 16-item preliminary occupational embeddedness measure (seven internal and nine external).

## Part 2: initial psychometric characteristics

The goal of Part 2 was to finalize the set of items and determine the initial psychometric characteristics of the measure. To accomplish this we conducted an item analysis and calculated coefficient alpha internal consistency estimates. Then we examined the factor structure through the use of confirmatory factor analysis (CFA).

## Method

### Participants

Participants were members of one of two statewide professional associations in the Midwestern United States. The sample of 140 consisted of psychologists (72 percent) and pharmacists (27 percent). Ages ranged from 24-77 years old ( $M=47.3$ ,  $SD=12.7$ ). Of these, 55 percent were male, 93 percent were Caucasian, and 70 percent reported being married. They were individuals who currently had clearly defined occupations, and their average occupational tenure was 19.3 years. The participants' education levels ranged from those who had obtained a Bachelor's degree (21 percent), Master's degree (16 percent), and Doctorate degree (56 percent).

### Procedure

The questionnaire was placed online and participants were directed to the link via email. Specifically, an email was sent to a representative from each association that included directions to access the online survey, and provided a URL link that directed them to the site. The representatives then forwarded the email to the members of their associations. Three days after the initial email was sent a reminder was sent via email to those same representatives who then forwarded it to the members of their respective associations. The reminder email included the information needed to locate the online survey, and thanked those who already completed it. The survey included the newly developed occupational embeddedness measure, demographic items such as applicant age, marital status, and occupational tenure. The occupational embeddedness items were rated on a Likert-type rating scale ranging from 1 (strongly disagree) to 5 (strongly agree).

### Analyses

First, descriptive statistics (means and standard deviations), item-total correlations and internal consistency (coefficient alpha) reliability estimates were computed for the external and internal dimensions of the OES. Second, a CFA was performed using LISREL 8.53 (Joreskog and Sorbom, 2003) to test the underlying structure of the scales. For this analysis each item was constrained to load on its respective latent factor and the factors themselves were free to correlate. A variance-covariance matrix was used as input into the program. To estimate the fit of the model several indices were considered including the chi-square statistic, root-mean-square error of approximation (RMSEA, Steiger, 1990), standardized root mean square residual (SRMR, Bentler, 1995), and comparative fit index (CFI, Bentler, 1990). These particular fit indices are recommended when using smaller sample sizes (e.g.  $n < 250$ , Hu and Bentler, 1999; Yadama and Pandey, 1995). RMSEA and SRMR values less than 0.08 and CFI values greater than 0.90 indicate a good fitting model (Hu and Bentler, 1999; Kline, 2005).

## Results

After considering item content, three items were eliminated because of low item-total correlations and low item variance. Table 1 provides the means, standard deviations, and reliabilities for the internal and external

dimensions of occupational embeddedness. As shown, reliabilities for both dimensions exceeded the 0.70 cut-off proposed by (Nunnally and Bernstein, 1994). Two CFAs were conducted in order to compare the fit of a one- and two-factor model. The hypothesized two-factor model proved to be a better fit than an alternative one-factor model, indicated by the significant model fit improvement ( $\Delta \chi^2 (1, n=140)=221.02, p<0.001$ ). The remaining fit indices also indicated that the two-factor structure fit the data well  $\chi^2 (64, n=140)=91.42 p>0.05$  (RMSEA = 0.06, SRMR = 0.07, and CFI = 0.97). Items and item loadings are provided in Table II. As shown, item loadings ranged from 0.27 to 0.83 (mean item loading of 0.60) and were all statistically significant ( $p<0.01$ ).

### Part 3: scale refinement and initial validity

In this part of the study we sought to refine the measure, replicate the psychometric characteristics and factor structure obtained in Part 2, and generate initial evidence for the predictive validity of the measure. After examining the data from Part 2 we refined the items by replacing the word “career” with “occupation” in order to stay consistent with the most current term used in the literature (Ng and Feldman, 2007). Because other forms of related work-role attachment have shown negative relationships to occupational withdrawal intentions (e.g. Blau, 2009; Blau and Holladay, 2006; Lee *et al.*, 2000), as an initial test of predictive validity we expected occupational embeddedness to be negatively related to occupational withdrawal intentions as well. Although research linking tenure and education to other work-role attachment variables is somewhat more mixed (Lee *et al.*, 2000), consistent with Feldman and Ng (2007) we expected education, occupational and organizational tenure to be positively related to occupational embeddedness.

## Method

### Participants

The sample for Part 3 was drawn from three state-wide professional associations in the Midwestern United States. There were 156 participants, 37 percent of whom were dietitians, 35 percent were lawyers, and 15 percent were engineers (13 percent non-response to the item). Ages ranged from 20-82 years ( $M=44.6; SD =12.0$ ); 50 percent were men, 95 percent were Caucasian, and 75 percent reported being single. These participants were predominately college educated (27 percent Bachelor's degree; 21 percent Master's degree; and 35 percent Doctorate degree). Occupational tenure ranged from less than one year to 50 years ( $M =18; SD =12.5$ ).

### Procedure

The process for data collection was similar to the process outlined in Part 2. To be more specific, emails were sent to a representative from each professional association that contained a link to an online survey. The representative then forwarded the email to members of the association. The survey consisted of 13 OES items and three items to measure occupational withdrawal intentions from Blau (1985). These were:

1. I am thinking about leaving the occupation field;
2. I intend to look for a different field of employment; and
3. I intend to leave my current occupation field.

Blau reported an internal consistency reliability estimate (alpha) of 0.71 and test-retest reliability of 0.57. The OES and occupational withdrawal intention items were rated on a Likert-type rating scale ranging from (strongly disagree) to 5 (strongly agree). It also included several demographic items including age, education level, and occupational and organizational tenure.

## Analyses

The first step was to calculate descriptive statistics and internal consistency (coefficient alpha) reliability estimates for the OES dimensions. The next step was to conduct a CFA with LISREL 8.53 (Joreskog and Sorbom, 2003) using the variance-covariance matrix as input. Item loadings and fit indices were examined to assess the factor structure of the newly developed OES. Lastly, Pearson correlation coefficients were calculated to examine the relationship between the OES dimensions and other variables of interest.

## Results

Descriptive statistics and reliability estimates for Part 3 are shown in Table I. Acceptable reliabilities were found for the internal and external dimension of occupational embeddedness (i.e. greater than 0.70, Nunnally and Bernstein, 1994). The fit indices for a two-factor model indicated a good fit  $\chi^2(64, n=156)=112.01, p>0.05$  (RMSEA = 0.07, SRMR = 0.07, and CFI = 0.92). As shown in Table II, item loadings ranged from 0.34 to 0.98 (mean item loading of 0.57) and were all statistically significant ( $p<0.01$ ). Correlations among the study variables are presented in Table III. As expected, results found that internal and external occupational embeddedness were negatively related to occupational withdrawal intentions ( $r=-0.49, p<0.01$ ;  $r=-0.16, p<0.05$ ). Also, positive relations were found between internal occupational embeddedness and education ( $r=0.21, p<0.01$ ), as well as organizational tenure ( $r=0.21, p<0.01$ ).

## Part 4: convergent and discriminant evidence

With the psychometric characteristics and the two dimensional structure of the measure established and replicated we next sought to generate convergent and discriminant evidence to support the construct validity of the OES. For convergent evidence, we expected both dimensions of occupational embeddedness to correlate with conceptually similar measures. For these other measures we selected the occupational commitment instrument from Blau and Holladay (2006) because it includes measures of affective and normative commitment and two forms of continuance commitment. The two forms of continuance commitment incorporate the measure of occupational entrenchment developed by Carson *et al.* (1995). These two dimensions reflect accumulated costs of leaving one's occupation and the perception of limited alternatives to one's current occupation. In terms of discriminant evidence, we expected both dimensions of occupational embeddedness to have low correlations with a measure of social desirability. We also sought to demonstrate discriminant validity via confirmatory factor analysis. To do this we fit the hypothesized six factor model that had the indicators of the four commitment measures and the two OES subdimensions specified to load on their respective constructs. We then compared the fit of this model to a more parsimonious model that specified the OES indicators to load on the "accumulated costs" form of occupational commitment because it is conceptually the most similar to OES. Finally, we sought to demonstrate the incremental validity of the measure in the prediction of occupational withdrawal intentions beyond that of the measures of occupational commitment.

## Method

### Participants

The sample for this study consisted of 216 professionals ranging in age from 26-69 years old ( $M=48.01, SD=9.77$ ). Of these, 66 (31 percent) were male, 135 (62 percent) were female and 15 (6 percent) had a non-response to the gender item. Participants were members or former members of two Midwestern United States professional organizations and consisted of training and organizational development leaders, business executives, managers, human resource professionals and educational leadership professionals. Their average tenure in their occupation was 15.04 ( $SD=10.22$ ).

## Procedure

The process for data collection was similar to the process outlined in Parts 2 and 3. After receiving permission and instructions from the representatives of the two professional associations, the members of those associations were sent an email that contained a link to an online survey. The survey consisted of 13 OES items, three items to measure occupational withdrawal intentions from Blau (1989) and items to measure age, occupational and organizational tenure similar to Part 3. It also contained the 24 items used by Blau and Holladay (2006) to measure affective (six items) and normative occupational commitment (six items), as well as accumulated costs (eight items) and limited alternatives (four items). These latter two measures reflect dimensions of continuance commitment. The original source for these items reported alpha's ranging from 0.87 to 0.91. The survey also included ten items from Crowne and Marlowe's (1960) measure of social desirability. Crowne and Marlowe reported an internal consistency reliability estimate (KR20) of 0.88 and a test-retest correlation of 0.89. The items were rated on a Likert-type rating scale ranging from 1 (strongly disagree) to 5 (strongly agree).

## Analyses

For the first analysis zero-order correlations were calculated between the OES and other measures that were conceptually similar (affective commitment, normative commitment, accumulated costs, and limited alternatives) and distinct (social desirability). Evidence of convergent validity would be demonstrated if the OES scores were highly correlated with those measures purported to be conceptually similar, and evidence of discriminant validity would be established if the scores on the OES had little relation with measures that were deemed conceptually different. For the second analysis multiple CFA models were examined. Although we expect the OES to be related to occupational commitment, we also expect the two measures to be conceptually and empirically distinct. To examine their empirical distinctiveness several CFA models were examined where item parcels were formed for each of the commitment and embeddedness scales (Bandalos and Finney, 2001). This yielded three parcels for each of the six scales (affective commitment, normative commitment, accumulated costs, limited alternatives, internal and external embeddedness). For the third analysis, a hierarchical regression analysis was conducted to examine whether occupational embeddedness added incremental validity in predicting occupational withdrawal intentions beyond occupational commitment.

## Results

Table IV shows the descriptive statistics and correlations among the variables. Consistent with our expectations regarding convergent validity, internal occupational embeddedness was correlated with affective occupational commitment ( $r=0.64, p<0.01$ ), normative occupational commitment ( $r=0.30, p<0.01$ ), accumulated costs ( $r=0.49, p<0.01$ ) and limited alternatives ( $r=0.20, p<0.01$ ). External occupational embeddedness was correlated with affective occupational commitment ( $r=0.20, p<0.01$ ), normative occupational commitment ( $r=0.17, p<0.05$ ), accumulated costs ( $r=0.23, p<0.01$ ) but not limited alternatives ( $r=-0.04, p<0.01$ ). In terms of discriminant validity neither the internal nor external occupational embeddedness dimensions were related to social desirability ( $r=-0.08$  and  $-0.01, ns$ , respectively).

A CFA was conducted on the occupational embeddedness and occupational commitment measures. The fit indices examining the six-factor model (Model A) indicated acceptable fit  $\chi^2(120, n=216)=236.29, p>0.05$  (RMSEA =0.07, SRMR =0.07, and CFI =0.97). Loadings for the item parcels ranged from 0.51 to 0.97. We compared this hypothesized model to an alternative four-factor model (Model B) that specified items for accumulated costs and occupational embeddedness on one factor, and the items for the other three commitment measures on their respective factors (affective commitment, normative commitment, and limited alternatives). The occupational embeddedness items were specified to load with the accumulated cost dimension because they are most conceptually similar. We also compared the hypothesized six-factor model to a second alternative

four-factor model (Model C) specified items for affective commitment, internal embeddedness, and external embeddedness on one factor, and the items for the other three scales loaded on their respective factors (normative commitment, accumulated costs, and limited alternatives). This model was specified post hoc (based on the correlation of affective occupational commitment with occupational embeddedness) and represents the next most plausible empirical model that would fit the data. The results of these nested model comparisons are shown in Table V. The results indicate the six-factor model fit the data significantly better than did any of the alternative models.

Table VI presents the results of a hierarchical regression analysis of occupational withdrawal intention on the occupational commitment and embeddedness variables. On step 1 of the regression, the commitment variables accounted for 33 percent of the variance in occupational withdrawal intention ( $R^2=0.33$ ,  $p<0.01$ ). An examination of the regression weights for the individual variables showed that only affective occupational commitment was a statistically significant predictor of occupational withdrawal intentions ( $\beta=-0.52$ ,  $p<0.01$ ). The addition of the two embeddedness variables accounted for an additional 4 percent of the variance in occupational withdrawal intentions ( $\Delta R^2=0.04$ ,  $p<0.01$ ). An examination of the regression weights at this step showed that internal occupational embeddedness was a statistically significant predictor of occupational withdrawal intentions ( $\beta=-0.29$ ,  $p<0.01$ ) but external occupational embeddedness was not.

## Discussion

In response to calls in the literature (Ng and Feldman, 2007) the purpose of this study was to develop a measure of occupational embeddedness. Toward that end we defined the construct and described its theoretical foundations (links, fit and sacrifice) and its two subdimensions (internal and external occupational embeddedness). Building on previous theoretical definitions we then conducted a four-part study to develop the new measure. In Part 1, we generated a set of items and produced evidence for the content validity of those items. In Part 2, we established the psychometric characteristics and confirmed the factor structure of the new measure. In Part 3, we replicated the first study and also provided initial evidence for the measure's validity by showing that the two subdimensions were related to occupational withdrawal intentions. Across Parts 2 and 3 the items from both subdimensions of occupational embeddedness displayed acceptable levels of internal consistency and a two dimensional factor structure consistent with the hypothesized subdimensions. Part 3 also supported the assertion that both subdimensions were negatively related to occupational withdrawal intentions. In Part 4, we showed the internal consistency of the measures again, and that scores on the two subdimensions were empirically distinguishable from and related to measures of similar constructs (forms of occupational commitment) and unrelated to a measure of a dissimilar construct (social desirability). This was shown in the pattern of correlations among these variables as well as the CFA's that showed the hypothesized model (with OES as separate factors) fit the data better than both the next most plausible conceptual or empirical models. Part 4 also showed that the scores on the internal subdimension accounted for variance in occupational withdrawal intentions beyond that accounted for by four forms of occupational commitment. Taken together, these studies provide evidence for the measure's content validity, reliability, two-dimensional factor structure, convergent and discriminant relationships to other theoretically relevant measures and its incremental correlation with an important outcome.

The results suggest that the OES may be used to complement existing research and measures of work-role attachment. One reason for this is because there are important similarities and differences between occupational embeddedness and other forms of work-role attachment. There is some conceptual overlap with measures of continuance occupational commitment (Blau and Holladay, 2006) and occupational entrenchment (Carson *et al.*, 1996), which both reflect the loss of accumulated investments. However, there are differences in that the OES explicitly includes an external dimension. While we acknowledge similarities across these

constructs we also note that our results suggests that occupational embeddedness taps into variance in occupational withdrawal intentions not explained by these other constructs. This is consistent with Cooper-Hakim and Viswesvaran's (2005) assessment based on the empirical literature that multiple measures of different forms of attachment can help researchers better understand work-related behavior.

Although the research presented here provides strong evidence for the psychometric quality and validity of the new measure of occupational embeddedness, the results for the predictive validity of the external subdimension are somewhat mixed. In the sample used for Part 3, scores on the external subdimension correlated with occupational withdrawal intention but they did not in the sample used for Part 4. This finding regarding external occupational embeddedness underscores the multiple "levels" at which people can become attached to their work-roles. People can become attached to their jobs, organizations, occupations and the communities where they reside. It is not always the case that a change in one requires a change in all of the others (Ng and Feldman, 2007). Given Lee *et al.*'s (2000) definition of an occupation as a line of work with a particular set of knowledge, skills and abilities, a change of occupations would almost always imply a change of jobs. However, a change in occupation does not necessarily require a change of organization or community. For example, a school teacher who finishes a degree in educational leadership and moves into the job of school principal may or may not stay in the same school, school district or community.

These mixed finding may also stem from the boundary conditions indentified by Allen (2006) for the relationship between external embeddedness and turnover. One boundary condition is that high external embeddedness may make one more aware of local alternatives that would allow an occupational change to occur within the same community. This can be seen in the differences between the two samples. The sample for Part 3 consisted of employed adults in three specific occupations (dieticians, lawyers, and engineers) from across a Midwestern state. The sample for Part 4 consisted of employed adults from a wide range of occupations drawn from the membership rolls of two local professional groups. One of the goals of these local professional groups is to provide networking and support within the community that lead to local opportunities for its members. For this group more than the others, it may be the case that withdrawing from one occupation to pursue another is less likely to require relocating to another community. In such a case we would not expect external occupational embeddedness to play a strong role in occupational withdrawal. Taking this logic one step further, we can also envision a scenario where the relationship between external embeddedness and occupational change is actually positive. This would occur when one is so highly embedded in the external community one in willing to change occupations in order to stay in a particular community.

Like any study this one has a number of strengths and limitations. One strength of the study is its reliance on multiple samples. The heterogeneous make-up of the three samples in terms of the occupations they included may also be considered a strength in that by using a variety of occupations we can be more confident that our results will generalize across occupations, which may have different credentialing processes, educational requirements, etc. The heterogeneous samples do however introduce an uncontrolled source variability in the responses. Fortunately, this error variance would have made it more difficult to detect the significant relationships that were found. Another limitation of the study, particularly relevant to part 4, is that all of the data were collected using a cross-sectional design and that occupational withdrawal intention rather than actual behavior was measured. These place well-known limits on the assertions regarding causal relationships among the variables.

There are a number of opportunities for future research. One logical first step would be to examine occupational embeddedness relative to job embeddedness. Obviously, they appropriately share a common dimension, namely, the external subcomponent of occupational embeddedness and the external subcomponent of job embeddedness. However, they differ in terms of the referent or target for the internal subcomponent with job embeddedness referring to the job and occupational embeddedness referencing one's occupation. It would

seem that these two would have different antecedents and outcomes because a change of jobs does not imply a change of occupations. Future research to empirically substantiate these likely differences would be in order. Another direction for future research is to begin to incorporate and empirically test the role of occupational embeddedness into models of occupational change. One approach here would be to adapt the approach of Crossley *et al.* (2007), who studied a model linking job embeddedness and job turnover, to testing a model linking occupational embeddedness to occupational turnover. Such a model could include measures of attachment and labor market conditions (see Ng *et al.*, 2007). Future research could also aim to better understand the antecedents and consequences of people feeling bound to their occupations. A number of propositions regarding these can be found in the literature (e.g. Ng and Feldman, 2007). In closing, the measure of occupational embeddedness should prove helpful for conducting such research.

**Table I** Descriptive statistics and internal consistency reliability coefficients

Dimension	M/SD		Alpha	
	Part 2	Part 3	Part 2	Part 3
Internal OE	3.77/0.68	3.64/0.68	0.73	0.71
External OE	3.20/0.71	3.33/0.66	0.80	0.78

Notes:  $n = 140$  for Part 2;  $n = 156$  for Part 3; Part 4  $n = 216$ . All measures were rated on a five-point Likert type scale ranging from 1 (strongly disagree) to 5 (strongly agree)

**Table II** Items and item loadings

Item	Internal OE		External OE	
	Part 2	Part 3	Part 2	Part 3
1. I have many strong ties to my occupation	0.27	0.34		
2. I can reach my professional goals working in my current occupation.	0.56	0.46		
3. I would give up a lot if I changed occupations.	0.83	0.98		
4. My occupation allows me to utilize my skills and talents	0.80	0.72		
5. Leaving this occupation would require substantial personal sacrifice	0.51	0.43		
6. I feel like I have a good fit with my occupation	0.53	0.53		
7. I have family members who live in my community			0.30	0.56
8. I feel like I have a good fit with my community			0.73	0.65
9. The people in my community are similar to me			0.81	0.59
10. I fit with the culture of my community			0.83	0.64
11. My values and those of my neighbors are similar			0.66	0.53
12. I would give up a lot if I left my community			0.73	0.66
13. I have too many hobbies to leave the community where I reside			0.30	0.35

Notes:  $n = 140$  for Part 2;  $n = 156$  for Part 3; All loadings were significant at the 0.01 level

**Table III** Correlations among study variables for Part 3

Variable	M	SD	1	2	3	4	5	6
1. Internal OE	3.64	0.68	(0.71)					
2. External OE	3.33	0.66	0.18 *	(0.78)				
3. Occupational withdraw intention	2.06	1.03	-0.49 **	-0.16 *	(0.92)			
4. Education	4.40	1.54	0.21 **	0.09	-0.12	-		

5. Occupational tenure	17.77	12.46	0.12	0.09	-0.05	-0.06	-	-
6. Organizational tenure	10.85	9.50	0.21 **	0.12	-0.06	-0.13	0.70 **	-

Notes: n = 156, \* p < 0.05; \*\* p < 0.01

**Table IV** Correlations among study variables for Part 4

Variable	M	SD	1	2	3	4	5	6	7	8
1. Internal OE	3.74	0.72								
2. External OE	3.50	0.68	0.28 **							
3. Occ withdrawal intention	2.24	1.08	0.53 **	-0.09						
4. Affective Occ commitment	4.11	0.63	0.64 **	0.20 **	-0.57 **					
5. Normative Occ Commitment	2.51	0.74	0.30 **	0.17 *	-0.15 *	0.25 **				
6. Accumulated costs	2.90	0.74	0.49 **	0.23 **	-0.17 *	0.25 **	0.46 **			
7. Limited alternatives	2.39	0.81	0.20 **	-0.04	0.17 *	-0.08	-0.18 **	0.14 *		
8. Soc desirability	3.28	0.38	-0.09	-0.01	0.21 **	-0.04	0.14 *	0.05	0.03	

Notes: n = 216; \* p < 0.05, \*\* p < 0.01

**Table V** Results of confirmatory factor analysis for Part 4

Model	X <sup>2</sup>	df	p	RMSEA	SRMR	CFI	Δdf	Δx <sup>2</sup>
Model A	236.29	120	0.0	0.07	0.07	0.97		
Model B	442.48	129	0.0	0.11	0.09	0.91	9	1
Model C	469.71	129	0.0	0.11	0.09	0.91	9	1

Notes: n = 216. Model B = OES items loaded on Accumulated Costs Scale; Model C = OES items loaded on Affective Commitment Factor; RMSEA = root-mean-square error of approximation; SRMR = standardized root mean square residual. CFI = comparative fit index. The chi-square difference test compares each alternative model with the 6 Factor Model

**Table VI** Regression of occupational withdrawal intention on commitment and embeddedness variables

Predictor	Beta	Step 1 R <sup>2</sup>	ΔR <sup>2</sup>	Beta	Step 2 R <sup>2</sup>	ΔR <sup>2</sup>
Commitment variables		0.33 **	0.33 **		0.37 **	0.04 **
Affective Occ commitment	-0.52 **			-0.40 **		
Normative Occ commitment	0.05			9.04		
Accumulated costs	-0.12			0.01		
Limited alternatives	-0.05			-0.03		
Embeddedness variables						
Internal Occ embeddedness				-0.29 **		

External Occ embeddedness				0.06		
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Notes: n = 216; \*p < 0.05, \*\*p < 0.01

## About the authors

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