

An Examination of the Factor Structure and Scale Reliability of the Work Motivation Scale, the Motivation Sources Inventory¹

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This study examined the factor structure and scale reliability of the Motivation Sources Inventory (MSI; Barbuto & Scholl, 1998), an instrument designed to measure the motivational concepts contained within the meta-theory of motivation (Leonard, Beauvais, & Scholl, 1999). Participants were comprised of financial-service professionals, health-industry administrators, and retail and distribution workers, all engaged in full-time employment in Ireland. Data were collected through the administration of the Motivation Source Inventory (MSI) to a sample of working professionals ($N = 252$). Factor analyses, scale reliabilities, and inter-item correlations were conducted. Results of the current study did not support the scale structure reported by the instrument developers. The implications of these results and suggestions for future research are presented.

To date, reviews of research in the area of work motivation have been inconclusive in their attempts to identify a comprehensively reliable theory of motivation, or unifying the many conceptual theories that exist. Current theories have had only limited success in describing, explaining, and predicting human behavior in the workplace. Additionally, this success is generally limited to specialized circumstances and conditions (Kanfer, 1992). Barbuto and Scholl (1998) highlighted that discussion over the merits and weaknesses of many motivational perspectives, including psychosocial (Jung, 1971), expectancy (Lewin, 1938; Vroom, 1964), need-based (Maslow, 1954; McClelland, 1961), value-based (Etzioni, 1961), self-concept-based (Gecas, 1982; Sullivan, 1989), goal setting (Locke & Lantham, 1984), intrinsic (Deci, 1975), and developmental (Kegan, 1982; Piaget, 1972), is ongoing and inconclusive.

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More recently, attempts have been made to overcome the theoretical complexities and practical difficulties of the many motivational theories in existence. Leonard, Beauvais, and Scholl (1999) proposed an integrated model of motivation, following an extensive review and analysis of the relevant literature. Their research was based on the growing realization that the existing, traditional models of motivation fail in their attempts to explain and predict the diversity of human behavior, particularly in the workplace. Leonard et al. attempted to overcome current weaknesses in motivational theory by presenting a meta-theory of work motivation.

The theory itself incorporates many important motivational concepts previously identified in the literature with the notion of the self-concept. Through their examination of the work of theorists such as Barnard (1938), deCharms (1968), Deci (1975), Etzioni (1961), Hackman and Oldham (1976), Katz and Kahn (1978), Kelman (1980), Locke and Henne (1986), Shamir (1990) and others, Leonard et al. (1999) identified three main motivational concepts, which they labeled *intrinsic process motivation*, *goal internalization motivation*, and *instrumental motivation*.

Intrinsic process motivation is described as a person's motivation to perform certain kinds of work or to engage in certain kinds of behavior for the sheer fun of it. The work itself serves as the primary incentive to perform because of the enjoyment the individual gets from the activity itself. *Goal internalization motivation* is described as an individual's motive to perform because the content of the behavior is congruent with his or her personal value system. For example, an individual may believe in a particular cause or hold certain beliefs/values that motivate them to work toward a collective goal. Finally, *instrumental motivation* is described as an individual's motivation to perform a task or engage in behaviors because the individual perceives that his or her efforts will result in tangible outcomes/rewards. Such outcomes may be pay, promotion, stock options, bonuses, and so forth.

Leonard et al. (1999) explored a range of research on self-based theories, including social identity theory (Stryker, 1987; Tajfel & Turner, 1985), self-efficacy theory (Bandura, 1986), and self-presentation theory (Beach & Mitchell, 1990). Through this review of the literature and a process of inductive reasoning, Leonard et al. proposed a meta-theory of motivation, containing five motivational sources. These sources are the three stated previously, plus two additional sources arriving from their examination of self-based theories; namely, external self-concept motivation and internal self-concept motivation.

External self-concept motivation is described as an individual's motivation to engage in certain behaviors for the approval of others. The self-concept is inferred from the role expectations of reference groups, with the individual seeking affirmation of competencies and traits from others. *Internal self-*

concept motivation is described as an individual's motivation to perform in order to reinforce his or her internal standards of traits, competencies, and values. This concept of the ideal self serves to motivate the individual to perform in ways that reinforce this concept. To summarize, the five sources of motivation include (a) intrinsic process motivation; (b) instrumental motivation; (c) external self-concept motivation; (d) internal self-concept motivation; and (e) goal internalization motivation.

While the meta-theory of motivation put forward by Leonard et al. (1999) does not conform to any one motivational theory, it is not atheoretical. Its purpose is the integrative understanding of a number of motivational theories, and by moving away from the specifics of a particular theory, the model allows for a better practical understanding of the concept of motivation as a multidimensional, complex phenomenon. In particular, the model is useful for investigating the work setting, as it allows for the recognition of multiple motivational sources for influencing behavior. Additionally, it recognizes personal differences in the degree to which various motivational sources are of importance to different individuals, and the complex way in which the work environment may influence the motivational sources of the individual. The 10 propositions of the theory also present a strong theoretical framework from which to view and apply the theory. For the sake of brevity, Leonard et al.'s (1999) propositions are not repeated here.

The theory has generally been well received by scholars in the field of work motivation (Naus, van Iterson, & Roe, 2007) and has found its way into classic readings in organizational behavior (Ott, Parks, & Simpson, 2003). While its proposed value as a more comprehensive theory of motivation has been recognized (Naus et al., 2007; Steel & Konig, 2006), the theory has not been widely applied or examined in the work context. The application and use of a theory such as that put forward by Leonard et al. (1999) is dependent to a large degree on the ability to operationalize the concepts contained within. To paraphrase Greenberg (2007), the development of a robust tool that measures the concepts contained within a newly proposed theory can do much to improve the popularity and use of that theory.

To date, one psychometric measurement instrument has been constructed that attempts to measure the five motivational concepts of the theory. Barbuto and Scholl (1998) developed an instrument to measure the five motivational sources described in the meta-theory of motivation. This instrument is known as the Motivation Sources Inventory (MSI; Barbuto & Scholl, 1998). The inventory is comprised of five subscales, each containing six items relating to each of the five motivational sources of Leonard et al.'s (1999) meta-theory. As reported by Barbuto and Scholl, the goodness of fit for the five subscales was reported at .92, while the alpha coefficients of the scales ranged from an acceptable .83 to .92. These results show support for the five

motivational concepts, as distinct factors that can be operationalized and measured.

The reported process of development and statistical reliability of the MSI (Barbuto & Scholl, 1998) suggests a useful quantitative measure of the concepts contained within Leonard et al.'s (1999) meta-theory of motivation, and the instrument has been applied with some success (Barbuto, 2000; Barbuto, Fritz, & Marx, 2000; Barbuto & Xu, 2006). A preliminary examination of the face validity of the instrument suggests some potential problems, particularly in a non-U.S. context. These suggestions led to an examination of the factor structure and statistical reliability of the MSI for a sample of professionals working in the financial-service sector in Ireland.

Method

Participants

The data under examination were drawn from a study that employed the MSI as a measurement instrument (Evans, 2001). The original study examined relationships between leadership and motivation in a working sample in Ireland, and employed convenience sampling. The data set contained 252 (186 females, 73.8%; 66 males) financial-service professionals, health-industry administrators, and retail and distribution workers, all of whom were engaged in full-time employment. Participants ranged in age from 20 to 65 years. While participants varied in age and gender with respect to industry, they are viewed as homogeneous for the purposes of data analysis because the MSI has been reported by its developers as a structurally stable measure of work motivation, and is consequently expected to be valid for normally diverse working samples.

Measure

The measure under examination is the MSI, which is a 30-item instrument, containing six items for each of the five motivational concepts proposed by Leonard et al. (1999). Participants were administered a paper-and-pencil version of the MSI, which included those items presented by Barbuto and Scholl (1998).³

³Because the MSI is a copyrighted instrument, it is not reprinted in full here. Interested readers can view the items and a complete description of the instrument's development in Barbuto and Scholl (1998).

As indicated by the developers of the MSI, participants responded to each item in the instrument on a 7-point Likert-type scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). In all cases, responses were gathered through voluntary participation in the aforementioned study. All participants were assured that their responses would remain confidential, and no individuals or the organizational units for which they worked would be identified in the study.

Data Analysis

Factor analyses were conducted on raw scores for all participant responses on the MSI ($N = 252$). Although an initial factor analysis of the data produced eight factors with eigenvalues greater than 1, parallel analysis suggested that a maximum of six factors be retained. The six-factor solution produced a nonsensible result, with a large number of cross-loadings. In addition, one of the factors contained only two items (a minimum of three items is necessary for a factor). As a result of these initial findings, and because the MSI's original developers intended it to consist of five factors, a confirmatory factor analysis was re-run, specifying five factors and using varimax rotation, as Barbuto and Scholl (1998) reported the factors of the MSI to be orthogonal.

Results

Table 1 shows the factor structure of the scale with only those loading greater than .300 being presented. The factor analysis accounted for 52.0% of the total explained variance. As there were many nontrivial cross-loadings (9 in the current analysis), an attempt to reduce them was made by deleting the items with cross-loadings and factor-analyzing them again. Unfortunately, with each iteration of this process, more cross-loadings were uncovered. Therefore, it was not possible to remove all of them without greatly reducing the size of the scale. Consequently, the items were deemed to fit with the factor on which they most highly loaded.

The scale items presented here are summarized according to the following code. Items initially indicated by Barbuto and Scholl (1998) as belonging to the scale measuring intrinsic process motivations are coded *IP*, instrumental motivation items are coded *I*, internal self-concept items are coded *ISC*, external self-concept items are coded *ESC*, and goal internalization items are coded *GI*. For each item presented in Table 1, the numbers contained in brackets correspond to the item number listed in the

Table 1

Factor Analysis of the 30-Item MSI

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
Intrinsic process motivation (51)	.758				
Intrinsic process motivation (21)	.756				
Instrumental motivation (07)	.619				
Goal internalization (35)	.601		.331		.301
Goal internalization (10)	.544				
Intrinsic process motivation (16)	.529			-.382	
External self-concept (58)	.526				
Goal internalization (50)	.440		.398		.375
Intrinsic process motivation (31)	.396				
Instrumental motivation (17)		.845			
Instrumental motivation (12)		.663			
Instrumental motivation (22)		.663			
External self-concept (18)		.651			
Instrumental motivation (32)		.614			
External self-concept (23)		.512		.474	
External self-concept (53)	.304	.480		.331	
Instrumental motivation (52)		.454			
Internal self-concept (49)			.749		
Goal internalization (25)			.726		
Internal self-concept (54)			.721		
Internal self-concept (34)			.622		.333
Internal self-concept (39)			.563		
Internal self-concept (04)			.541		
Internal self-concept (29)			.511		
External self-concept (03)	-.431			.672	
Intrinsic process motivation (06)	.402	.370		.539	
External self-concept (08)				.706	
Goal internalization (03)			.305		.621
Intrinsic process motivation (11)					.615
Goal internalization (55)					.657

appendix of Barbuto and Scholl's original publication of the Motivation Sources Inventory.

As is evident from the results presented in Table 1, the various items did not load neatly on their expected factors. Scale reliability analyses for the factors presented in Table 1 were also conducted (see Table 2).

Factor 1 consisted of four IP items: one I item, three GI items, and one ESC item. Although three of the nine items had nontrivial cross-loadings, this subscale had an alpha coefficient of .79. Factor 2 consisted of five I items and three ESC items. Despite two items having fairly large cross-loadings, this subscale also had good internal reliability ($\alpha = .80$). Factor 3 was the most clear (in terms of the original designation), having five ISC items and one GI item. This also had an acceptable alpha coefficient ($\alpha = .72$) and only one cross-loading. Factor 4 consisted of three items, including two ESC items and one IP item. Two of the three had nontrivial cross-loadings and had a fairly low alpha coefficient ($\alpha = .62$). Factor 5 had a very low alpha coefficient of .54 and contained two GI items and one IP item. This, again, had one item that loaded on more than one factor.

Discussion

The results reported here do not support the original factor structure and scale construction put forward by the instrument developers, Barbuto and Scholl (1998). As can be seen in Table 1, an examination of the factor structure using the dataset failed to identify five factors related to the five motivational concepts contained in Leonard et al.'s (1999) meta-theory of motivation. An attempt to bring meaning to the five factors identified in Table 1 presents difficulties.

In the case of the first factor, items that were designed to be conceptually related to instrumental motivation, intrinsic process motivation, goal internalization, and external self-concept motivation are all found together.⁴ Given the proposed conceptual independence of factors presented in Leonard et al.'s (1999) meta-theory, a combination of statements professed to measure four of the five motivational concepts represents a considerable weakness in the use of the instrument for the current sample.

The prospect for rational explanation of the structure of Factor 2 improves somewhat with the finding that only items that were originally conceptually related to instrumental motivation and external self-concept motivation are found together. This result suggests the possibility of

⁴For those who are interested in exploring conceptual meaning through the statements themselves, a complete list of the MSI statements is presented in Barbuto and Scholl (1998).

Table 2

Scale Reliability Analysis for Factor Structure

	Scale mean if item deleted	Scale variance if item deleted	Corrected item-total correlation	Squared multiple correlation	Cronbach's α if item deleted	Cronbach's α
Factor 1						.790
IP (51)	34.24	85.71	.575	.491	.756	
IP (21)	34.23	87.29	.581	.467	.757	
I (07)	34.37	84.68	.537	.362	.761	
GI (35)	34.33	84.46	.583	.460	.755	
GI (10)	33.59	88.74	.479	.398	.770	
IP (16)	35.00	89.37	.413	.336	.780	
ESC (58)	33.69	90.21	.370	.261	.787	
GI (50)	33.01	92.85	.467	.339	.772	
IP (31)	32.85	98.74	.314	.240	.789	
Factor 2						.802
I (17)	26.44	72.71	.665	.553	.755	
I (12)	26.61	77.58	.507	.330	.782	
I (22)	26.96	77.30	.565	.328	.772	
ESC (18)	26.93	79.54	.548	.477	.776	
I (32)	27.32	80.90	.445	.234	.791	
ESC (23)	26.11	77.67	.492	.305	.784	
ESC (53)	27.63	82.17	.465	.265	.787	
I (52)	25.46	84.18	.423	.248	.793	
Factor 3						.757
ISC (49)	36.69	19.61	.596	.371	.719	
GI (25)	37.40	14.60	.659	.554	.680	
ISC (54)	37.79	16.75	.509	.331	.721	
ISC (34)	37.04	17.57	.537	.370	.714	
ISC (39)	36.82	20.24	.278	.156	.765	
ISC (04)	36.96	19.81	.415	.230	.740	
ISC (29)	36.96	18.56	.420	.377	.739	
Factor 4						.621
ESC (03)	6.11	8.25	.464	.245	.472	
IP (06)	8.54	9.95	.330	.112	.651	
ESC (08)	8.10	7.56	.504	.270	.408	
Factor 5						.540
GI (03)	11.04	6.52	.387	.150	.382	
IP (11)	11.41	6.49	.331	.112	.475	
GI (55)	11.43	6.96	.339	.120	.458	

Note. IP = intrinsic process motivation; I = instrumental motivation; GI = goal internalization; ESC = external self-concept; ISC = internal self-concept.

conceptual overlap between Leonard et al.'s (1999) concepts of external self-concept motivation and instrumental motivation. In fact, if we consider instrumental motivation as a refinement of more established motivational concepts (e.g., extrinsic motivation), we can see that the relationship identified here, between external self-concept motivation and instrumental motivation, is not counterintuitive. Both concepts relate to reward that is extrinsic to the individual. In the case of instrumental motivation, this is manifest primarily through remuneration.

In the case of external self-concept motivation, this is manifest through the overt recognition of peers or supervisors, which, in many cases, may be perceived by respondents as an important mediating variable in the attainment of monetary rewards. The current findings suggest that a more detailed examination of these concepts be conducted to determine if they are sufficiently related to be categorized as one motivational construct or, at the very least, that more subtle instrument design is needed to separate the two concepts more clearly in participants' perceptions and responses.

The results presented in Table 1 for Factor 3 also show some promise for the scale. All of Barbuto and Scholl's (1998) original internal self-concept items loaded onto this factor, with only one nontrivial cross-loading. Cronbach's alpha coefficient for this scale was also at an acceptable level ($\alpha = .76$). However, there was also one goal internalization item that loaded strongly onto this factor, which suggests a need for possible re-examination of this item to determine its conceptual similarity to the concept of internal self-concept motivation.

The remaining two factors (Factors 4 and 5) presented in Table 1 contained only three items each. Many of the items cross-loaded to other factors (particularly items in Factor 4), and the mix of external self-concept and intrinsic process items in Factor 4, and goal internalization and intrinsic process items in Factor 5 does not lend itself to ready interpretation, or present a clear conceptual link to the motivational constructs proposed by Leonard et al. (1999).

Some variation between the current findings and the original factor structure may be attributed to the differing cultural contexts in which the instruments have been used. Data from the current study were collected from an Irish sample, while the instrument developers employed a U.S. sample. In addition, the respondents who participated in the original instrument development ($N = 156$) were reported as being upper-level undergraduate students (Barbuto & Scholl, 1998). In contrast, responses reported in the current study came from full-time working professionals.

The variation between the current findings and the factor structure and reliability presented by the instrument's developers highlights potential flaws

in the MSI. An examination of those published research studies that have reported use of the MSI shows it to have been employed primarily by its primary developer (Barbuto, 2000; Barbuto et al., 2000; Barbuto & Gifford, 2007; Barbuto & Xu, 2006) with none of the further published studies re-examining the original factor structure originally reported by Barbuto and Scholl (1998).

In summary, the current findings raise questions as to the validity of the factor structure of the MSI, specifically in an Irish context, and suggest that further study and investigation of its reliability are needed. The apparent weaknesses of the MSI, as the sole instrument designed to measure the motivational concepts contained within Leonard et al.'s (1999) meta-theory of motivation, may also be contributing to the lack of research and development on the meta-theory. Re-examination and possible refinement of the MSI or development of an alternative instrument may serve to promote further research in this area.

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