An Integrated Model of Work Motivation Applied in a Multicultural Sample

Un modelo Integrado de Motivación Laboral Aplicado a una Muestra Multicultural

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Abstract. An integrated model of work motivation was tested in a multicultural sample by analyzing the construct and convergent validity of the measurement tools included in the HSA-Mot model. This model integrates within a relationship network a number of key motivational constructs that operate on different levels: needs, instrumentality, self-efficacy, equity and critical psychological states (knowledge of results, responsibility and meaningfulness). Two cross-sectional studies were conducted. The first concerned four different samples of employees from Chile, Spain, the United Kingdom and Portugal. The construct validity of the measurement tools was studied by means of a CFA. The second study, involving a sample of Mexican workers, analyzed the convergence between the motivational measures proposed by the integrated model and other measures of motivation. The results of both studies were positive and revealed high fit indices between the data and the proposed theoretical model (values above .90 and residuals below .08), as well as high convergence with the other measures used (correlations above .6). The HSA-Mot model shows correct index of validity in its measurement tools and, more importantly, provides key information for tailoring interventions once low levels of motivation have been detected.
Keywords: integrated model, work motivation, work motivation measurement, validation.

Resumen. Un modelo integrado de motivación en el trabajo (ASH-Mot) se puso a prueba en una muestra multicultural mediante el análisis de la validez de constructo y convergente. Este modelo integra, dentro de una red de relaciones, varios constructos motivacionales que operan a distintos niveles: necesidades, instrumentalidad, creencias de auto-eficacia, equidad y estados psicológicos críticos (conocimiento de los resultados, responsabilidad y significado). Dos estudios transversales se llevaron a cabo. En el primero participaron cuatro muestras diferentes de Chile, España, Inglaterra y Portugal. La validez de constructo de los instrumentos de medición se estudió por medio del AFC. En el segundo estudio, participó una muestra de México; se analizó la convergencia entre la medida de motivación propuesto por el ASH-Mot y otras medidas de motivación. Los resultados fueron positivos; reveló altos índices de ajuste entre los datos y el modelo teórico (valores superiores a 0,90 y residuos inferiores a 0,08), así como una alta convergencia entre las diferentes medidas de motivación (correlaciones superiores a 0,6). El modelo de ASH-Mot muestra unos valores adecuados de validez de sus herramientas y, más importante, proporciona información clave para la adaptación de las intervenciones una vez que los bajos niveles de motivación han sido detectados.
Palabras clave: medición de la motivación laboral, modelo integrado, motivación laboral, validación.

Contemporary relevance of work motivation

Despite its long history in academic literature, work motivation continues to be a topic of considerable interest in work and organizational psychology. This is evidenced by publications such as the special issue of the *Academy of Management Journal* (2004, vol. 29, issue 3), numerous review articles (e.g., Ambrose & Kulik, 1999; Arrieta & Navarro, 2008; Donovan, 2001; Latham & Pinder, 2005) and various handbooks (e.g., Kanfer, Chen, & Pritchard, 2008a; Latham, 2006; Porter, Bigley, & Steers, 2003). Interest in the topic also continues in the applied field, as witnessed by papers such as that of Pritchard and Ashwood (2008). In sum, motivation is still considered to be a key element within organizational behavior, and a motivated workforce continues to be regarded as essential for the competitiveness of organizations.

The literature has produced a significant number of theories for understanding work motivation. Although, in general, these theories can be considered as old (cf. Ambrose & Kulik, 1999; Arrieta & Navarro, 2008) they have nonetheless offered precise, albeit partial, understandings of work motivation. As Kanfer, Chen and Pritchard (2008b) argue, the various theories have

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ISSN: 1576-5962 - http://dx.doi.org/10.5093/tr2011v27n3a2

sacrificed completeness for precision, although given the amount of knowledge generated in the field it would seem that the approach has been useful. What the different theories have achieved is to highlight various key processes that operate on different levels of analysis or from distinct epistemological conceptualizations regarding human behavior. The outcome of this is that very precise information is now available with regard to the different mechanisms involved in motivated behavior.

Nevertheless, several authors have made numerous recommendations about how to take the field forward, one of the most important being the need to integrate theories and constructs (e.g., Donovan, 2001; Locke & Latham, 2004; Mitchell & Daniels, 2003); indeed, it has become clear that many of the proposed constructs do not oppose one another but, rather, refer to different processes or mechanisms that could be integrated within broader explanatory frameworks. For example, Donovan (2001, p. 69) argues that 'rather that debating the merits of each approach and formulating criticism of opposing models, future work should move towards the development and validation of an integrated, goal-based model of self-regulation that incorporates the important components of these various theories'.

This paper describes two studies that tested the validity (construct and convergent) of an integrated model of work motivation (the HSA-Mot model of Quijano & Navarro, 1998), one which integrates within a relationship network a number of constructs from different theoretical approaches, in this case, needs, perceived instrumentality, self-efficacy beliefs, perceived equity and critical psychological states. The aim is to contribute to the integration of knowledge in the field and to offer a useful model that can be applied in evaluation processes and organizational interventions.

Some integrated models of work motivation

Several integrated models have been proposed in recent years, although many of them have only been formulated in theoretical terms and still await empirical testing. For example, this is the case of the models proposed by Klein (1989), Locke and Latham (2004), Robbins (2003) and Schnake (2007). Other models have already been the subject of empirical research, for example, those of Katzell and Thompson (1990) or Roe, Zinovieva, Dienes, and Ten Horn (2000), and have generally shown good fit indices. Table 1 shows some of the main characteristics of these models; of course, this list of models is not exhaustive.

It should be noted that these models present different levels of integration regarding the prior theories and concepts which they gather together. Thus, models such as those of Katzell and Thompson (1990) or Schnake (2007) show a low level of integration and present a series of variables in the form of an amalgam (the term used by Kanfer (1990) to describe the first of these models), along with an integrated network of the relationships between these variables. In contrast, the models of Robbins (2003) and Locke and Latham (2004) show a very high degree of integration by founding the relationships on theories with a solid basis (expectancies theory [VIE] in the former case and, in the latter, goal-setting theory and social cognitive theory).

Another issue is that most of these models do not refer exclusively to work motivation, and in fact include so many elements (motivation, commitment, involvement, satisfaction, etc.) that they are more akin to general models of organizational behavior at the individual level. The paradigmatic example in this regard is the proposal of Locke and Latham (2004), although the same could be said for the models of Roe et al. (2000) and Schnake (2007). In contrast, models such as those of Klein (1989) and Robbins (2003) clearly correspond to integrated models centered on motivation.

Finally, it is worth noting that motivation, i.e. the construct that is ultimately being addressed by these models, is considered either as a construct expressed explicitly in the model (Katzell & Thompson, 1990; Locke & Latham, 2004; Roe et al., 2000; Schnake, 2007) or as an implicit and latent construct within the relationship network proposed by the model (Klein, 1989; Robbins, 2003).

The HSA-Mot model of Quijano and Navarro (1998)

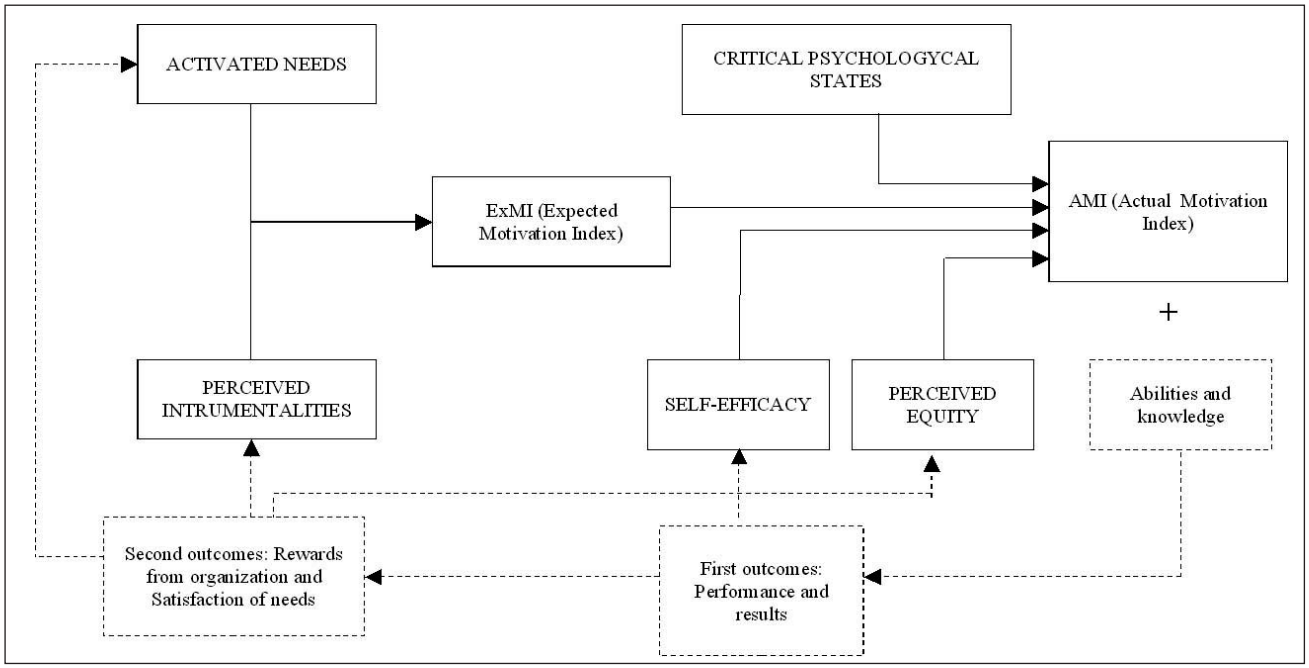
In 1998 Quijano and Navarro proposed an integrated model of work motivation as part of what they called the Human System Audit, a general framework of organizational evaluation and intervention (see Quijano, Navarro, Yepes, Berger, & Romeo, 2008). This model is shown in Figure 1. The HSA-Mot model considers work motivation as "*the degree of effort that people are willing to exert in their work*" (Quijano & Navarro, 1998, p. 195) and it integrates contributions from classical theory such as needs (Alderfer, 1972; Herzberg, Mausner, & Snyderman, 1959; Maslow, 1954; McClelland, 1961), the concept of instrumentality from VIE theory (Vroom, 1964), self-efficacy from social cognitive theory (Bandura, 1986), perceived equity, a concept used in theories of organizational justice (Adams, 1965), and critical psychological states from the job characteristics model (Hackman & Oldham, 1976). In relation with the models previously presented the HSA-Mot model is theoretical and tested, shows a high degree of integration, centered on work motivation and using an implicit concept of it. With this kind of combination, it differs from all the previous models. And this is important because researchers and practitioners can be interested in applied models centered only in work motivation which previously had been

ISSN: 1576-5962 - http://dx.doi.org/10.5093/tr2011v27n3a2

Table 1. Main characteristics of some integrated models of work motivation

Issue	Klein's model (1989)	Katzell & Thompson's model (1990)	Roe, Zinovieva, Dienes & Horns' model (2000)	Robbins' model (2003)	Locke & Latham's model (2004)	Schnake's model (2007)
Level of development	Theoretical	Theoretical and tested	Theoretical and tested	Theoretical	Theoretical	Theoretical
Principal theories and concepts considered	Goal, behavior, performance, feedback, attribution theory, individual and situational characteristics, control theory	Performance, resources, expectancy, effort, attitudes, equity, rewards, commitment, norms, personal dispositions, work environment	Performance, stress, satisfaction, effort, organizational commitment, job involvement, needs theory, job characteristics theory, organizational climate	VIE theory, needs theory, equity theory, goal-setting theory, reinforcement theory, opportunity, ability	Personality theory, VIE theory, goal-setting theory, social cognitive theory, job characteristics theory, attribution theory, organizational justice theory, needs, values, personality, goals, performance, job involvement, organizational commitment, satisfaction, etc.	Effort propensity, group size, ability, personality, group performance norms, organizational commitment, distributive justice, evaluation apprehension, job satisfaction, job scope, expected utility of withdrawal
Degree of integration	High	Low	Medium	High	High	Low
Type of model	Centered on work motivation	Organizational behavior model	Organizational behavior model motivation	Centered on work motivation	Organizational behavior model	Organizational behavior model
Motivation concept	Implicit	Explicit	Explicit	Implicit	Explicit	Explicit

Figure 1. The HSA-Mot model (Quijano & Navarro, 1998)



Note: The continuous lines represent motivational constructs studied in this research. The discontinuous lines represent non-motivational constructs that were not studied in this research.

ISSN: 1576-5962 - http://dx.doi.org/10.5093/tr2011v27n3a2

tested. Klein (1989) and Robbins (2003) models could be very interesting for these purposes; however they do not have empirical support. In this sense the HSA-Mot model is advantageous.

The HSA-Mot model is based on the assumption that people have a set of needs which, in the case of workers, drive them to behave in certain ways so as to satisfy them. It is important to bear in mind that these needs are individual dispositions of varying degrees of stability that guide behavior with the aim of achieving satisfaction and reducing the tension produced by unfulfilled needs (Kanfer, 1990). As such, needs represent the energy source that drives the motivated behavior of employees. The model considers a set of ten different needs: 1) pay; 2) health and physical cover; 3) stability at work; 4) relationships with co-workers; 5) support from managers; 6) recognition for work well done; 7) improvement in retribution; 8) promotion; 9) applying knowledge and skills; and 10) professional development. These ten needs are considered as intrinsic needs (1-3 and 7-8) or extrinsic needs (4-6 and 9-10), a classification that is consistent with the most common ways of understanding intrinsic and extrinsic motivation in the work context (Gagné & Deci, 2005). It is also of interest to know the salience or strength of these needs, since not all of them will serve to drive behavior.

Having identified the needs which drive behavior (i.e. the needs more salient or activated) the HSA-Mot model then seeks to determine the worker's perceived instrumentality with respect to these needs, i.e. the extent to which the worker believes that doing the job well will lead to his or her needs being satisfied (what Vroom calls achieving second outcomes that have valence for the subject). The model focuses on the perceived instrumentality related to those needs that have previously been shown to be salient or genuinely activated and which drive the worker's behavior (for details see Quijano & Navarro, 1998).

On the basis of the connection between need activation and perceived instrumentality the HSA-Mot model proposes a first indicator, the ExMI or Expected Motivation Index, which considers the level of activation of needs and the subjective perception of employees as regards the likelihood that their needs will be satisfied by means of a job well done. The ExMI is an initial motivation indicator that is relevant to both research (in terms of the degree to which activated needs are met) and intervention, in that it can serve as a useful guide to professional practice. However, used in isolation the ExMI is not necessarily a good indicator of the effort that people might put into their work. Indeed, it is necessary to consider a series of others key cognitive processes that research has showed to have an important influence of final motivation.

For example, it is useful to enquire about a worker's self-efficacy with regard to the tasks required by the job. Self-efficacy beliefs, understood as beliefs about one's own capacity to organize and carry out courses of action required at work (Bandura, 1986), are a fundamental cognitive process which the model also contemplates. Beliefs about self-efficacy will influence on final motivation, in that one would expect a worker with low perceived self-efficacy to make less of an effort, and for less time, thus affecting the final motivation. In contrast, a worker with firm beliefs about his or her self-efficacy will make more of an effort over a longer period of time. All of this is independent of the degree of need activation and the individual's perceived instrumentality.

Perceived equity is another important construct which affect on final motivation. The HSA-Mot model considers perceived distributive justice, or equity, as the degree of perceived balance in the relationship of exchange between employee and organization, this relationship being compared with the equivalent exchange attained by other employees (Adams, 1965). As research has repeatedly shown (see, for example, the review by Latham & Pinder, 2005), a worker who perceives a lack of equity tends to show a reduced effort at work undermining his/her performance.

Finally, the HSA-Mot model also contemplates critical psychological states (Hackman & Oldham, 1976) as key variables to understand the final motivation. In an optimum situation, knowledge of the results obtained from the work done, feeling responsible for these, and regarding the work as meaningful and able to provide a sense of psychological achievement will all have a positive effect on an employee's final motivation. Obviously, the absence of these features will be de-motivating and limit the final motivation achievable, regardless of the behavior shown by the other elements considered by the model.

After considering all of these psychological processes, jointly with the ExMI, the model proposes one further indicator of motivation as the final and real measure of the effort intensity shown by a worker: this is the AMI or Actual Motivation Index. The model also contemplates another series of elements, which are not strictly motivational, in order to understand the feedback mechanisms produced in motivation and with the aim of considering the latter as a dynamic and self-regulated process. Thus, having decided upon a degree of effort, and depending on his or her skills and knowledge, a worker will achieve some initial performance outcomes. The performance obtained will provide feedback for self-efficacy beliefs, and will also be considered by the organization, which may or not respond with some form of recompense. At this point a second feedback mechanism comes into play with respect to perceived instrumentality. Likewise, the recompense offered by the organization will activate social comparison mechanisms which, in turn, will initiate a new feedback mechanism regarding perceived equity. Finally, the recompense offered by the organization will affect the activation of needs, especially, according to the proposals of Maslow (1954) and Herzberg et

ISSN: 1576-5962 - http://dx.doi.org/10.5093/tr2011v27n3a2

al. (1959), by activating more the higher-order needs and deactivating lower-order ones.

In addition to its theoretical formulation the HSA-Mot model has also proposed a series of instruments for measuring the motivational constructs on which it is based. Specifically, the paper by Quijano and Navarro (1998) describes three different questionnaires for measuring need activation, perceived instrumentality and the other psychological processes (self-efficacy, equity and critical psychological states). The total number of items varies according to number of needs considered, the maximum being 50 items when considering all ten needs proposed by the model. In the abovementioned report the authors conducted an initial psychometric study of these tools using exploratory factor analysis and a sample of 144 employees from six Spanish organizations. In general, the results obtained were adequate, although the authors recommend that further research be carried out with a larger sample and confirmatory factor analysis.

Finally, it should be noted that the model has been used by human resources professionals as an evaluation tool in around twenty organizations in Brazil, Chile, Spain, Mexico, Peru, Poland, Portugal and the United Kingdom. This indicates that professionals have found the model to provide relevant information for interventions.

The present study

Given the wish to contribute to integration in the field the present research involved two different studies whose objectives were, firstly, to study the construct validity of the measurement tools proposed in the HSA-Mot model and, secondly, to study the convergent validity of the measures generated by the model with respect to other tools used to evaluate motivation. As such, the validity of the HSA-Mot model is tested as regards the motivational constructs it proposes.

Furthermore, and as a third objective, the present research aims to extend the initial study conducted by Quijano and Navarro (1998) by applying the model to samples from different cultures in order to determine whether the measurement tools behave adequately in diverse cultural contexts. This will provide new evidence about the validity of the assessment tools and the model.

STUDY 1

Method

Participants

The participants were employees from different organizations in Chile (N = 279), Portugal (N = 520), Spain (N = 625) and the United Kingdom (N = 102). The Chilean sample comprised employees from four public organizations (large public administrations), and some of their main characteristics are as follows: 16% were professionals, 20% were technical staff, 19% were administrative personnel and 40% were auxiliary staff. As regards their contractual status, this was either government-funded project (36%), permanent (30%) or temporary (32%).

The samples from Portugal, Spain and the United Kingdom were drawn from three hospitals. Considering these three samples as a whole it is interesting to note that 49% of participants were nurses, 18% were technical staff and 10% were doctors, while the remainders were various kinds of auxiliary personnel. Furthermore, 14% of participants had some sort of managerial responsibility. We did not collect more information of the sample due to privacy concerns (e.g., anonymity and confidentiality guarantees)

Design and Procedure

A cross-sectional and correlational design was used. The questionnaires included in the HSA-Mot model were applied to participants following an initial contact with the managers of these organizations who had expressed an interest in conducting an evaluation of staff motivation. Information was provided about the objectives of the research and its interest for management to both workers and middle managers of the respective organizations. Participation was voluntary and anonymous, and the confidentiality of the data was ensured at all times. In this regard, it was emphasized that the focus of interest was the general results rather than an individual case. Data were collected using a software platform in which the scales were implemented. Finally, after data collection, participants were offered feedback about the most noteworthy findings.

Instrument

The three questionnaires included in the HSA-Mot (Quijano & Navarro, 1998) were applied. The first of these, the Activated Needs Scale (ANS), evaluates the level of activation of needs. It includes two sub-scales: in the first the participant has to rank ten needs according to the importance they have for him/her; in the second the participant scores the importance of each need on a ten-point Likert scale (1 = Not at all important, 10 = Very important). The needs evaluated were: 1) pay; 2) health and physical cover; 3) stability at work; 4) relationships with co-workers; 5) support from managers; 6) recognition for work well done; 7) improvement in retribution; 8) promotion; 9) applying knowl-

ISSN: 1576-5962 - http://dx.doi.org/10.5093/tr2011v27n3a2

edge and skills; and 10) professional development. Each of the two sub-scales has ten items. The consideration of these two scales with different formats (i.e. forced choice and Likert) was originally proposed by Hackmand and Oldham (1975) in their development of the JDS. Both scales are necessary because if we only consider Likert scale respondents tend to answer that all needs are very important. To avoid this bias, the task to setting priorities allow distinguish among the importance of these needs.

The second scale, the Perceived Instrumentality Scale (PIS), evaluates perceived instrumentalities with respect to the previously assessed needs. More specifically, employees are asked to evaluate the likelihood that each of these needs will be satisfied as a result of a job well done. This is scored on a five-point Likert scale (1 = Highly unlikely, 5 = Very likely) and there are twenty items in total (two item to measure each instrumentality perception).

The third and final scale, the Psychological Processes Scale (PPS), evaluates self-efficacy beliefs, perceived equity and critical psychological states (knowledge of results, responsibility and meaningfulness). The PPS comprises ten items and participants have to indicate on a five-point Likert scale (1 = Strongly disagree, 5 = Strongly agree) the extent to which they agree with each statement. Some examples of the items included in this scale are as follows: "In general I believe that I am capable of managing my work" (self-efficacy); "I believe that what I receive according to what I contribute in this Trust is fair" (equity); "Normally I know whether my work is correct or not" (knowledge of results); "The results of my work depend to a large extent on my efforts to do my job well" (responsibility); "I consider that the majority of tasks I have to do in this job are useful and important" (meaningfulness).

All these scales, originally formulated in Spanish, were translated into English and Portuguese using the back-translation procedure. In the case of the Chilean sample, the tool was first tested with ten participants in order to ensure that the original wording was fully comprehensible.

Analysis

In order to study the construct validity of these tools included in the HSA-Mot model the data obtained from the different samples were subjected to a confirmatory factor analysis (CFA). As the needs scale comprises two sub-scales of a different nature the correlations between them were also studied.

Results

First, let us consider the correlations between the two sub-scales of needs (see Table 2). Spearman's correlation coefficients were used here as the distribution of some of the items did not fulfill the criteria of normality. It can be seen that the correlations are significant, with values around .3 and .4. Only in the UK sample did two non-significant values appear, and this is likely due to the smaller sample size. Taking the samples as a whole the mean correlation value was .36, similar to that reported in the original study by Quijano and Navarro (1998) and also similar to results reported by Hackmand and Oldham (1975). Although the values obtained cannot be considered as high, it should be remembered that the two ANS sub-scales do have a different focus (setting priorities and degree of importance). Previous research has shown that ipsative scores suffer from some limitations when common statistical procedures are used (e.g. correlations); however, this research have also found that forced-choice formats are a good mean of control for some of the response biases typical of normative scales (Baron, 1996).

Now let us consider the most significant results of the CFA with respect to the scales of instrumentality and psychological processes (see Table 3). Because sample size is critical in method choice, here, maxi-

Table 2. Correlations between the two sub-scales of the Activated Needs Scale in the different samples

Need	Chile (N = 279)	Portugal (N = 520)	Spain (N = 625)	United Kingdom (N = 102)
Pay	.388**	.451**	.461**	.326**
Health and physical cover	.421**	.371**	.574**	.191
Security and stability	.496**	.391**	.446**	.196*
Relationships with co-workers	.327**	.315**	.426**	.269**
Support from managers	.422**	.281**	.444**	.326**
Recognition for work well done	.396**	.302**	.513**	.145
Improvement in retribution	.246**	.375**	.408**	.481**
Promotion	.373**	.269**	.549**	.297**
Applying knowledge and skills	.363**	.296**	.421**	.277**
Professional development	.288**	.341**	.448**	.470**

Note: ** $p < .01$, * $p < .05$

ISSN: 1576-5962 - http://dx.doi.org/10.5093/tr2011v27n3a2

mum likelihood methods were used with the larger samples, while the ordinary least squares method was used with the smaller ones. It is worth recalling the specific models that were tested by the CFA: the PIS, with twenty items measuring ten different perceptions of instrumentality; and the PPS, with ten items measuring five different processes.

Table 3. Main fit indices from the CFA for the Perceived Instrumentality Scale and Psychological Processes Scale

	PIS				PPS			
	Chile (N = 279)	Portugal (N = 520)	Spain (N = 625)	United Kingdom (N = 102)	Chile (N = 279)	Portugal (N = 520)	Spain (N = 625)	United Kingdom (N = 102)
χ^2	231.009	254.472	294.157	155.526	29.810	31.137	43.383	44.007
χ^2 *sig*	<.001	<.001	<.001	.033	.231	.184	.012	.011
NFI	.949	.953	.969	.963	.989	.960	.959	.978
GFI	.981	.939	.943	.975	.994	.983	.977	.978
AGFI	.968	.898	.904	.958	.988	.962	.950	.951
SRMR	.050	.038	.030	.065	.031	.033	.033	.076
RMSEA	.053	.047	.049	.047	.027	.023	.035	.084

Note: The analysis used the OLS method for the Chilean and UK samples and the ML method for the Portuguese and Spanish samples.

The results of the different fit indices and residuals calculated via the CFA can be considered to be good. In the case of the PIS all the fit indices had a value above .9, while the residuals were always below .08; both these values are consistent with the cut-off points established to consider the model as appropriate (Bentler, 1995). With respect to the PPS, the values were once again good (fit indices above .9 and residuals below .08) in the Chilean, Portuguese and Spanish samples. In the UK sample the fit indices were also good, but the residuals were slightly higher. As before, it is precisely the smallest sample (N = 102) that seems to be affecting the results.

STUDY 2

Method

Participants

The participants in this second study were 145 employees of a Mexican hospital: 37.2% were administrative staff, 13.4% were doctors, 13.4% nurses, 11% were doctors' assistants and 7.3% were non-healthcare auxiliary personnel. A total of 26.8% of participants had some managerial responsibilities.

Design and Procedure

A cross-sectional and correlational design was used. As in Study 1, contact was made with the managers of this organization who expressed an interest in evaluating staff motivation. Participation was voluntary and anonymous. Questionnaires were administered in paper format and, after collecting the data, all participants were offered feedback about the most noteworthy findings.

Instruments

In addition to the three scales (ANS, PIS and PPS) included in the HSA-Mot model and described above, Study 2 also applied the scale of intrinsic job motivation developed by Warr, Cook and Wall (1979), as well as a short three-item scale that had been previously used in the study of Quijano and Navarro (1998); this short scale was inspired by the measure of intrinsic motivation included in the JDS of Hackman and Oldham (1975).

The scale of Warr et al. comprises six items that were originally scored using a seven-point Likert scale, although in the present study only five response options were used (1 = Strongly disagree, 5 = Strongly agree) so as to make it compatible with the response format of the other scales used. This scale has yielded good reliability indices (α = .82) and its loadings on factor analysis (ranging between .44 and .66) showed it to be distinct from other scales with which it was applied (work involvement, higher-order need strength, perceived intrinsic job characteristics, etc.; see Warr et al., 1979). Some examples of items from this scale are as follows: "I feel a sense of personal satisfaction when I do this job well"; "My opinion of myself goes down when I do this job badly"; or "I try to think of ways of doing my job effectively". The original tool, developed in English, was translated into Mexican Spanish using the back-translation procedure.

As regards the use of the three-item short scale, the aim was to include a second comparison measure. The items that comprised this scale were as follows: "I feel like I want to make an effort with my work"; "I take

ISSN: 1576-5962 - http://dx.doi.org/10.5093/tr2011v27n3a2

pride in doing my job as well as I can"; and "I feel eager to work hard and achieve results". As before, the response format was a five-point Likert scale (1 = Strongly disagree, 5 = Strongly agree).

Analysis

A correlation analysis was conducted in order to study the convergent validity between the motivation measures included in the HSA-Mot and those of the scale of intrinsic job motivation and the short scale. Given that the HSA-Mot model considers both intrinsic and extrinsic motivations a second correlation analysis was also conducted, differentiating between participants who were predominantly motivated by intrinsic factors and those motivated by extrinsic ones, it being expected that higher values would be obtained for the former. Participants motivated predominantly by intrinsic factors were considered to be those who showed values above the median on the activation of the intrinsic needs (i.e. relationships with co-workers, support from managers, recognition for work well done, applying knowledge and skills, and professional development). In contrast, participants motivated predominantly by extrinsic factors were those with values above the median on extrinsic needs (i.e. pay, health and physical cover, stability at work, improvement in retribution, and promotion).

Finally, and considering the samples from Study 1 and Study 2 together, basic descriptive analyses (minimum and maximum values, mean, median, standard deviation and principal percentiles) were carried out with each of the indicators (ten needs, ten items of perceived instrumentality, ExMI, self-efficacy, perceived equity, knowledge of results, responsibility, meaningfulness and the AMI) generated by the HSA-Mot model.

Results

The different scales used showed an adequate psychometric behavior. Specifically, the sub-scales of the ANS had a mean correlation value of .204 ($p < .05$), the PIS gave NFI = .958, GFI = .960, AGFI = .933, SRMR = .082 and RMSEA = .085, the PPS gave NFI = .989, GFI = .986, AGFI = .969, SRMR = .054 and RMSEA = .041, the scale of intrinsic job motivation yielded $\alpha = .697$ ($F(113,5) < .001$), and the short scale an $\alpha = .683$ ($F(121,2) = .001$). Having checked the correct functioning of these scales in this study the correlations between the measures reported by the HSA-Mot model and the Warr and short scales were then calculated (see Table 4).

Note, firstly, that the AMI shows a significant relationship with the measures of the other two scales used as a convergence criterion (Warr scale and short scale), and, secondly, that the AMI has better correlation values with these criteria than does the ExMI, the other main indicator proposed by the HSA-Mot model.

Table 4. Correlations between the different measures provided by the HSA-Mot model and the scales of Warr et al. and the short scale

	1	2	3	4	5	6	7	8	9
1. Warr scale	1								
2. Short scale	.630**	1							
3. AMI	.318**	.389**	1						
4. ExMI	.234**	.334**	.927**	1					
5. Self-efficacy	.368**	.391**	.431**	.260**	1				
6. Equity	.267**	.196*	.329**	.213*	.167	1			
7. Knowledge of results	.259**	.285**	.317**	.186*	.577**	.208*	1		
8. Responsibility	.391**	.435**	.456**	.400**	.426**	.276**	.411**	1	
9. Meaningfulness	.374**	.390**	.523**	.351**	.552**	.270**	.505**	.467**	1

Note: N = 145; ** $p < .01$, * $p < .05$.

The analysis which differentiated between participants who were mainly motivated by intrinsic needs and those mainly motivated by extrinsic ones yielded a set of results clearly in line with what would be expected. When focusing on extrinsically-motivated participants there were no significant relationships between the AMI and the Warr and short scales. In contrast, the corresponding values were highly significant when considering the intrinsically-motivated participants (see table 5).

The samples used in studies 1 and 2 were also considered as a whole (N = 1671), and Table 6 shows some of the most significant descriptive statistics for all the measures provided by the HSA-Mot. The generic indicators, ExMI and AMI, gave mean values around 5, with the latter measure showing less variability (*SD*). The different psychological processes generally showed high mean values (around 8), the exception being the notably lower mean for perceived equity (5.5).

Discussion and Conclusions

The present research has suggested that the integrat-

ISSN: 1576-5962 - http://dx.doi.org/10.5093/tr2011v27n3a2

Table 5. Correlations between the scales of Warr et al., the short scale and the AMI when considering people motivated by intrinsic needs and people motivated by extrinsic needs

		1	2	3
1. Warr scale		1		
2. Short scale	a (N = 32)	.710**	1	
	b (N = 30)	.483*	1	
3. AMI	a (N = 32)	.667**	.705**	1
	b (N = 30)	.203	.042	1

Note: N = 145; ** $p < .01$, * $p < .05$; a) people with high intrinsic motivation and low extrinsic motivation; b) people with low intrinsic motivation and high extrinsic motivati

Table 6. Descriptive statistics for the different measures generated in the HAS-Mot model

						Percentile						
	Min	Max	*M*	Mdn	*SD*	5	10	25	50	75	90	95
Need: Pay	1	10	6.99	7	1.78	4	4.5	5.5	7	8.5	9.5	9.5
Need: Health and physical cover	1	10	6.58	6.5	1.97	3	4	5.5	6.5	8	9	10
Need: Security and stability	1	10	7.08	7	1.87	4	5	6	7	8.5	9.5	10
Need: Relationships with co-workers	1.5	10	6.95	7	1.58	4	5	6	7	8	9	9.5
Need: Support from managers	1	10	6.58	7	1.83	3	4	5.5	7	8	9	9.5
Need: Recognition for work well done	1	10	6.21	6.5	1.84	3	3.5	5	6.5	7.5	8.5	9
Need: Improvement in retribution	1	10	6.81	7	1.70	4	4.5	5.5	7	8	9	9.5
Need: Promotion	1	10	6.04	6.5	2.03	2.5	3	4.5	6.5	7.5	8.5	9
Need: Applying knowledge and skills	1	10	6.75	6.5	1.65	4	4.5	5.5	6.5	8	9	9.5
Need: Professional development	1.5	10	7.13	7	1.71	4.5	5	6	7	8.5	9.5	10
Instrumentality: Pay	2	10	7.51	8	1.96	4	5	6	8	9	10	10
Instrumentality: Health and physical cover	2	10	6.98	7	1.78	4	5	6	7	8	9	10
Instrumentality: Security and stability	2	10	7.06	7	1.79	4	5	6	7	8	9	10
Instrumentality: Relationships with co-workers	2	10	7.49	8	1.43	5	6	7	8	8	9	10
Instrumentality: Support from managers	2	10	6.51	7	1.73	3	4	6	7	8	8	9
Instrumentality: Recognition for work well done	2	10	6.37	6	1.83	3	4	5	6	8	8	9
Instrumentality: Improvement in retribution	2	10	5.06	5	2.08	2	2	4	5	6	8	8
Instrumentality: Promotion	2	10	5.49	6	1.87	2	3	4	6	7	8	8
Instrumentality: Applying knowledge and skills	2	10	7.33	8	1.66	4	5	6	8	8	9	10
Instrumentality: Professional development	2	10	7.52	8	1.80	4	5	7	8	9	10	10
ExMI	1.40	10	5.39	5.09	1.49	3.15	3.65	4.35	5.09	6.40	7.44	8.05
Self-efficacy	2	10	7.95	8	1.08	6	7	7	8	8	9	10
Equity	2	10	5.51	6	1.84	2	3	4	6	7	8	8
Knowledge of results	2	10	7.91	8	1.27	6	6	7	8	9	10	10
Responsibility	2	10	8.06	8	1.33	6	6	8	8	9	10	10
Meaningfulness	2	10	8.09	8	1.25	6	7	8	8	9	10	10
AMI	2.83	10	5.29	5.03	0.83	4.21	4.43	4.80	5.03	5.69	6.37	6.90

Note: N = 1671.

ed model HSA-Mot provides a valid final measure of motivation that is convergent with other, more direct ways of evaluating motivation (for example, the Warr and short scale used here). However, in contrast to these other measurement forms the use of an integrated model provides additional information that is particularly useful in terms of obtaining a more subtle evaluation and, above all, for targeting interventions.

Obviously, if the aim is simply to determine the level of motivation, brief tools such as that of Warr et al. are of practical utility. However, if we wish to go beyond the particular level of motivation and explore in greater detail which motivational processes show higher or lower values, thus enabling us to target interventions, then there is clearly a need for integrated models that reveal the possible relationships at different levels of these processes. This is especially relevant if one considers that the intervention approach may vary depending on the results for each of the constructs included in the model. For example, intervening in order to increase motivation in a situation characterized by low self-efficacy beliefs will require different actions to another context where what predominates is a lack of perceived equity (working on skills training as opposed to modifying the internal coherence of the compensation system, for example). The HSA-Mot

ISSN: 1576-5962 - http://dx.doi.org/10.5093/tr2011v27n3a2

model described here enables this kind of evaluation to be carried out with different motivational processes that, subsequently, will serve as guides to intervention. In sum, the model provides useful information for the management and development of human resources.

Another issue, from the point of view of knowledge generation, is that the model is also useful for integrating a wide range of knowledge in an area where work has traditionally been conducted in a disjointed way, and where there are now calls for some form of integration (Donovan, 2001; Locke & Latham, 2004; Mitchell & Daniels, 2003). In this regard we believe that the HSA-Mot model should be understood as an open rather than a closed model, one that is capable of incorporating new elements or subtle features alongside those it already comprises. For example, it would be easy to integrate within its structure perceptions regarding procedural or interpersonal justice, elements that it does not include at present and have showed a powerful influence in motivation (Colquitt, Conlon, Wesson, Porter, & Ng, 2001). Another possibility would be to modify the initial list of needs and adapt it to particular situations.

With respect to the other integrated models discussed earlier in this paper (the models of Katzell & Thompson, Klein, Locke, & Latham, Roe et al., and Schnake) the HSA-Mot is a theoretical model that, with the present research, has been tested in different countries, shows a high degree of integration and which is centered on motivational constructs. In our view these elements make the HSA-Mot model an attractive tool for use in future research. Here the model was tested in cultural contexts other than that in which it was developed (Spain) and it showed adequate functioning in Chilean, Mexican, Portuguese and UK samples. In the case of the UK sample a couple of the values could have been better, and we believe that this is attributable to the size of the sample in question.

Limitations and recommendations for future research

The main limitations of this research concern the type of measurement tools used and the cross-sectional design. With respect to the former, and as is known, part of the convergence between measures observed here could be attributable to common method variance. Therefore, the use of other measurement procedures would be advisable in the future so as to provide further data about the model's validity and the measurement tools in question.

As regards the use of a cross-sectional design, research has shown that many organizational processes, including work motivation, behave in an unstable way and show considerable within-subject variability (see Dalal & Hulin, 2008; Ceja & Navarro, 2011; Navarro & Arrieta, 2009). Obviously, this variability is not captured here and raises a further question about the validity of the findings. As such there is an urgent need for longitudinal studies in the future.

It has already been noted that some of the results obtained in the UK sample could be better and may be due to the size of this sample. Another possibility is that this was not an effect of sample size but, rather, the result of it being a clearly distinct culture to the other groups (Latin-American and Mediterranean). This aspect should also be explored further by applying the model to other cultural contexts.

Conclusion

As we have stated different work motivation theories emphasize different motivational constructs that operate at different levels (e.g. needs, beliefs, attitudes, etc.). Using integrated models we can dispose of different key motivational information that provide us very relevant clues about how workers show different degrees of effort intensity in their jobs.

As a general recommendation for enriching the field, we believe that most research into organizational behavior which uses measures of work motivation in explanatory models could be improved by replacing the generic measures of motivation that are currently used with integrated models such as that described here. For example, in the area of transformational leadership, much research has used generic measures to study the influence of this type of leadership on the motivation of followers (see Bass & Avolio, 2000). In our view, richer knowledge would be generated by studying the specific motivational processes on which transformational leadership has an effect, since it is likely that not all of them are affected, or at least not to the same extent.

The HSA-Mot model is an integrated model of work motivation that allows us this type of assessment. The results found in the present study have shown that the measurement tools included in the HSA-Mot model have good indexes of construct and convergent validities in different samples of different countries. These are important requirements of whatever tool in which we are interested in using in scientific or applied field

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Manuscript Received: 30/8/2011
Revision Received: 2/11/2011
Accepted: 2/11/2011

ISSN: 1576-5962 - http://dx.doi.org/10.5093/tr2011v27n3a2

Appendix A. Descriptive statistics for the different scales in the five samples (Studies 1 and 2)

	Chile (N = 279)		Portugal (N= 520)		Spain (N = 625)		United Kingdom (N = 102)		Mexico (N = 145)	
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Need: Pay	7.05	1.91	7.30	1.26	6.96	1.93	6.11	2.34	6.67	1.68
Need: Health and physical cover	5.46	2.25	7.01	1.20	6.66	2.12	6.01	2.18	7.59	1.77
Need: Security and stability	7.09	2.44	6.81	1.20	7.43	1.90	6.29	2.18	7.43	1.79
Need: Relationships with co-workers	6.34	1.84	6.93	1.06	7.43	1.60	6.65	2.02	6.70	1.66
Need: Support from managers	6.75	2.08	7.29	1.22	6.08	1.84	6.09	2.10	6.20	1.94
Need: Recognition for work well done	5.90	1.97	7.39	1.17	5.59	1.81	5.45	1.79	5.74	1.66
Need: Improvement in retribution	6.74	1.80	7.49	1.18	6.58	1.74	5.30	2.12	6.76	1.50
Need: Promotion	(1)	(1)	7.64	1.03	5.19	2.01	5.05	2.04	5.74	1.65
Need: Applying knowledge and skills	6.94	1.99	6.72	1.16	6.61	1.74	6.68	1.98	7.14	1.80
Need: Professional development	7.77	1.73	6.46	1.20	7.34	1.81	6.73	2.12	7.96	1.55
Instrumentality: Pay	6.90	2.27	7.88	1.58	7.72	1.93	5.76	2.12	7.88	1.65
Instrumentality: Health and physical cover	6.75	2.20	7.43	1.53	6.79	1.76	6.29	1.33	7.26	1.77
Instrumentality: Security and stability	6.36	1.98	7.34	1.56	7.03	1.74	6.49	1.97	8.21	1.48
Instrumentality: Relationships with co-workers	7.30	1.70	7.93	1.13	7.23	1.47	7.68	1.27	7.32	1.41
Instrumentality: Support from managers	7.08	1.86	6.83	1.43	5.89	1.80	6.72	1.55	6.89	1.51
Instrumentality: Recognition for work well done	6.37	1.96	6.89	1.48	5.81	1.89	6.58	1.76	6.91	1.83
Instrumentality: Improvement in retribution	4.72	2.11	5.34	1.91	4.51	1.87	4.95	2.18	7.63	1.70
Instrumentality: Promotion	(1)	(1)	5.45	1.82	5.26	1.79	5.10	1.79	7.16	1.75
Instrumentality: Applying knowledge and skills	7.10	1.86	7.74	1.34	6.94	1.72	7.14	1.57	8.26	1.45
Instrumentality: Professional development	7.08	2.14	8.27	1.23	6.94	1.87	7.54	1.45	8.38	1.43
ExMI	5.30	1.73	5.63	1.41	5.06	1.34	5.40	1.44	6.30	1.51
Self-efficacy	8.52	1.26	7.59	.89	7.88	1.01	8.20	1.02	8.35	1.19
Equity	5.47	2.16	5.15	1.67	5.44	1.68	6.44	1.91	6.72	1.75
Knowledge of results	8.46	1.40	7.50	1.16	7.98	1.16	7.60	1.46	8.38	1.21
Responsibility	8.17	1.63	7.98	1.11	7.92	1.38	8.39	1.05	8.66	1.23
Meaningfulness	8.01	1.62	8.15	1.01	7.96	1.22	8.10	1.21	8.76	1.18
AMI	5.37	1.03	5.31	.70	5.10	.70	5.34	.79	6.00	1.13

Note: (1) This need and instrumentality perception was not measure in the Chilean sample.

ISSN: 1576-5962 - http://dx.doi.org/10.5093/tr2011v27n3a2

Appendix B. Full correlation matrix for whole sample (Studies 1 and 2; N = 1671)

	1	2	3	4	5	6	7
1. Need: Pay	1						
2. Need: Health and physical cover	.082**	1					
3. Need: Security and stability	.254**	.127**	1				
4. Need: Relationships with co-workers	-.041	.094**	-.031	1			
5. Need: Support from managers	-.127**	-.014	-.142**	.067*	1		
6. Need: Recognition for work well done	-.054*	-.018	-.120**	.079**	.477**	1	
7. Need: Improvement in retribution	.348**	-.009	.125**	-.074**	-.079**	.066*	1
8. Need: Promotion	.047	-.016	-.119**	-.181**	.087**	.185**	.289**
9. Need: Applying knowledge and skills	-.231**	-.078**	-.229**	.007	.053*	.006	-.114**
10. Need: Professional development	-.270**	-.119**	-.136**	.028	.035	-.101**	-.135**
11. Instrumentality: Pay	.095**	.076**	.078**	.111**	.007	.053*	.082**
12. Instrumentality: Health and physical cover	.043	.172**	.053*	.038	.045	.057*	.046
13. Instrumentality: Security and stability	-.031	.054*	.041	.069**	.074**	.104**	.037
14. Instrumentality: Relationships with co-workers	.033	.048	-.008	.138**	.041	.076**	.061*
15. Instrumentality: Support from managers	-.035	-.033	-.007	.006	.181**	.147**	.018
16. Instrumentality: Recognition for work well done	-.024	-.024	-.007	.043	.160**	.168**	.044
17. Instrumentality: Improvement in retribution	-.055*	.069**	.017	-.044	.030	.069**	.010
18. Instrumentality: Promotion	-.001	.057*	.035	.003	.008	.000	-.001
19. Instrumentality: Applying knowledge and skills	-.053*	.012	-.044	.077**	.079**	.085**	.033
20. Instrumentality: Professional development	-.067*	.013	-.074**	.086**	.107**	.116**	.081**
21. ExMI	-.166**	-.057*	-.115**	.077**	.169**	.133**	-.102**
22. Self-efficacy	-.011	-.050	.029	-.030	-.031	-.056*	-.018
23. Equity	-.117**	-.047	-.004	.071**	-.012	-.013	-.141**
24. Knowledge of results	.018	.011	.105**	-.009	-.018	-.106**	.030
25. Responsibility	-.025	-.004	.044	.012	.014	.021	.068*
26. Meaningfulness	-.052	.044	.033	.077**	.097**	.054*	.026
27. AMI	-.176**	-.054*	-.087**	.074**	.184**	.121**	-.103**

Appendix B. (Cont.)

	8	9	10	11	12	13	14
8. Need: Promotion	1						
9. Need: Applying knowledge and skills	.073**	1					
10. Need: Professional development	.004	.481**	1				
11. Instrumentality: Pay	.028	.009	.034	1			
12. Instrumentality: Health and physical cover	.078**	.054*	.015	.172**	1		
13. Instrumentality: Security and stability	.040	.033	.057*	.325**	.252**	1	
14. Instrumentality: Relationships with co-workers	.091**	.049	.005	.145**	.266**	.270**	1
15. Instrumentality: Support from managers	.074**	.055*	.079**	.166**	.257**	.407**	.322**
16. Instrumentality: Recognition for work well done	.093**	.034	.015	.176**	.228**	.403**	.309**
17. Instrumentality: Improvement in retribution	.065*	.004	.033	.226**	.164**	.423**	.163**
18. Instrumentality: Promotion	.058	.044	.100**	.198**	.212**	.411**	.205**
19. Instrumentality: Applying knowledge and skills	.062*	.134**	.064*	.201**	.283**	.420**	.359**
20. Instrumentality: Professional development	.120**	.153**	.095**	.222**	.289**	.404**	.389**
21. ExMI	.036	.282**	.290**	.209**	.296**	.469**	.319**
22. Self-efficacy	-.053	.091**	.128**	.013	.029	.062*	.069**
23. Equity	-.122**	.033	.067*	.161**	.036	.246**	.099**
24. Knowledge of results	-.088**	.017	.095**	.042	.062*	.050*	.037
25. Responsibility	.009	.054*	.072**	.019	.078**	.140**	.118**
26. Meaningfulness	.021	.097**	.125**	.094**	.113**	.215**	.193**
27. AMI	.018	.287**	.313**	.182**	.263**	.426**	.293**

ISSN: 1576-5962 - http://dx.doi.org/10.5093/tr2011v27n3a2

Appendix B. (Cont.)

	15	16	17	18	19	20	21
15. Instrumentality: Support from managers	1						
16. Instrumentality: Recognition for work well done	.754**	1					
17. Instrumentality: Improvement in retribution	.342**	.351**	1				
18. Instrumentality: Promotion	.448**	.432**	.635**	1			
19. Instrumentality: Applying knowledge and skills	.397**	.395**	.312**	.359**	1		
20. Instrumentality: Professional development	.431**	.436**	.356**	.407**	.590**	1	
21. ExMI	.581**	.557**	.446**	.522**	.574**	.592**	1
22. Self-efficacy	.123**	.080**	.014	.056*	.072**	.067**	.098**
23. Equity	.324**	.263**	.297**	.319**	.211**	.232**	.270**
24. Knowledge of results	.077**	.042	-.036	.043	.060*	-.010	.056*
25. Responsibility	.166**	.127**	.056*	.061*	.202**	.174**	.167**
26. Meaningfulness	.206**	.181**	.180**	.155**	.323**	.327**	.269**
27. AMI	.550**	.512**	.413**	.491**	.527**	.536**	.924**

Appendix B. (Cont.)

	22	23	24	25	26	27
22. Self-efficacy	1					
23. Equity	.102**	1				
24. Knowledge of results	.432**	.057*	1			
25. Responsibility	.330**	.128**	.342**	1		
26. Meaningfulness	.297**	.160**	.301**	.429**	1	
27. AMI	.286**	.344**	.207**	.295**	.401**	1

ISSN: 1576-5962 - http://dx.doi.org/10.5093/tr2011v27n3a2