

Job characteristics, role stress and mental health

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We propose and evaluate a model of mental health in the workplace. Based on Warr's (1987) distinction between job-related and context-free mental health, we hypothesize that indices of job-related affective well-being (work satisfaction, emotional exhaustion and depersonalization) and subjective competence (personal accomplishments at work) mediate the relationships between job characteristics and role stressors on the one hand, and mental health on the other. Confirmatory path analysis of responses from 720 hospital employees showed that all but 4 of the 20 hypothesized effects were significant in the expected direction, and the model provided a good fit to the data. Moreover, the proposed model fits the data better than both a non-mediational model and a model positing an alternate causal sequence. Results are interpreted as providing support for the mediational role of job-related well-being. Some directions for future research linking work and mental health are discussed.

The impact of work and the work environment on individual well-being is widely documented in the psychological literature (e.g. Adelman, 1987; Warr, 1984, 1987). Major reviews have highlighted the relationships between organizational characteristics and job dissatisfaction (Locke, 1976), job stress (Cooper & Marshall, 1978; Parker & DeCotiis, 1983; Sutherland & Cooper, 1988), physical and mental ill-health (Cooper & Marshall, 1976; House, 1980) as well as more positive approaches to mental health (Kasl, 1973; Warr, 1987). From Kornhauser's (1965) seminal study on the mental health of factory workers to the wide-ranging report on *Work in America* (1973), the overriding conclusion has been that organizational characteristics influence both physical and psychological well-being. Despite extensive research, there has been little attempt to progress beyond descriptive research to the examination of causal processes. In particular, there is a need to develop and evaluate causal models which delineate the processes whereby individual mental health is affected by work/organizational characteristics (Sauter, Murphy & Hurrell, 1990). The main goal of the current research is to develop and evaluate such a model.

Agreement exists that there is no single definition or conceptualization of mental health (Jahoda, 1958; Kasl, 1973; Strupp & Hadley, 1977; Warr, 1987; *Work in America*, 1973). As a construct defined in terms of both cultural (Jahoda, 1958) and individual (Jensen & Bergin, 1988) values, it may be impossible to define mental health in absolute terms (Gechman & Weiner, 1975). Despite this lack of precise definition, several authors

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have pointed to the inadequacy of defining mental health as the absence of mental illness (e.g. Jahoda, 1958). In efforts to formulate more positive definitions of mental health, both Kasl (1973) and Strupp & Hadley (1977) have proposed profile definitions which recognize the multifaceted nature of the construct. Warr (1987) has proposed a definition of mental health comprising five major components: affective well-being, competence, autonomy, aspiration and integrated functioning. Warr (1987) extends his analysis by positing a distinction between 'context-free' and 'context-specific' (Warr, 1987, p. 40) mental health. In this study, we follow Warr's (1987) conceptualization, where context-specific mental health refers explicitly to job-related mental health, i.e. those indices which reflect affective well-being and subjective competence in the workplace. In contrast, context-free mental health is a more global construct which is not tied to a particular setting or context.

Towards a model of mental health

We hypothesize that job-related mental health is the mechanism through which the subjective experience of employment affects context-free mental health. To paraphrase Barling (1990, p. xi), the central assumption of the current study is that people's positive and negative experiences of employment explain the relationship between work/organizational characteristics and context-free mental health. More specifically, individual perceptions of work/organizational characteristics give rise to job-related affective well-being and perceptions of competence at work. In turn, these context-specific reactions predict context-free mental health. This process is represented in the mediational model presented in Fig. 1. More specific rationales for the individual paths are now presented.

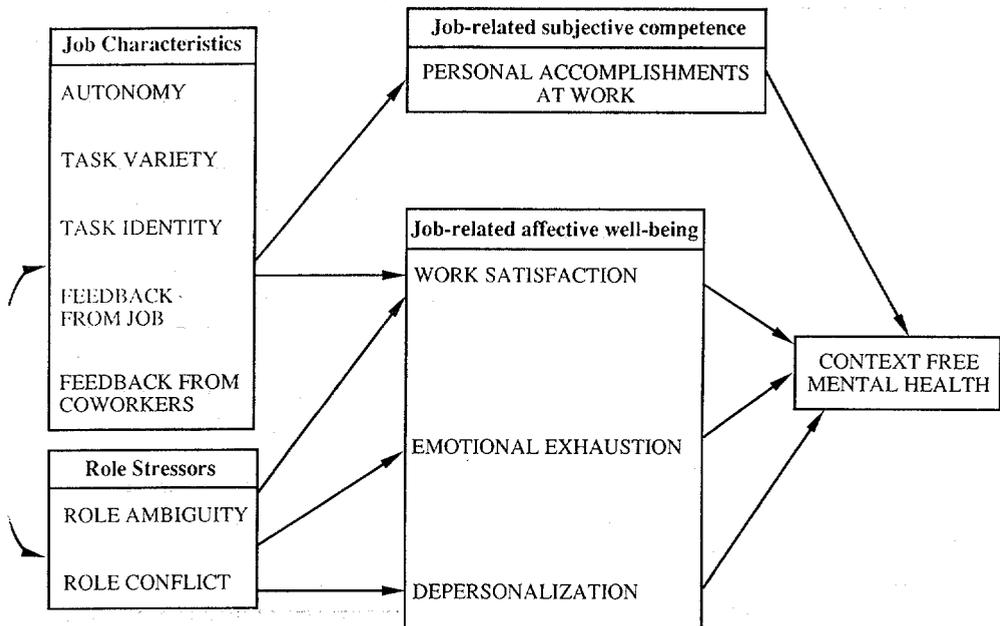


Figure 1. Proposed over-identified model of mental health.

Exogenous variables

With regard to the prediction of individual mental health, Kornhauser (1965) concluded that '... by far the most influential attribute is the opportunity work offers—or fails to offer—for the use of the workers' abilities and for associated feelings of interest, sense of accomplishment and personal growth and self-respect' (p. 63). In the present model, we consider two classes of exogenous variables, namely job characteristics (Hackman & Oldham, 1975, 1976) and role stressors (Rizzo, House & Lirtzman, 1970). Previous research has suggested that job characteristics and role stressors are related to the measures of job-related mental health used in the current study (namely, work dissatisfaction and burnout respectively). Most of this research is correlational. In one study, however, Wall & Clegg (1981) demonstrated that an experimentally grounded job redesign intervention based on Hackman & Oldham's (1975, 1976) model exerted a significant impact on both job-related and context-free mental health. In a more recent study, job redesign, and specifically increased control, resulted in increased psychological well-being (Wall, Corbett, Martin, Clegg & Jackson, 1990). Thus, while earlier studies have suggested a relationship between job characteristics and mental health (e.g. Wall, Clegg & Jackson, 1978), the current study extends this finding by focusing on potential mediators of the relationship.

Fried & Ferris (1987) suggest that 'There seems to be a high potential for job characteristics to influence psychological outcomes' (p. 311). The results of two meta-analytic reviews support a relationship between the job characteristics identified by Hackman & Oldham (1975) and job satisfaction. For example, Loher, Noe, Moeller & Fitzgerald (1985) report correlations ranging from .32 to .46 between job characteristics and job satisfaction. Of particular importance to the current study is Loher *et al.*'s (1985) finding that no single job characteristic had a stronger relationship to job satisfaction than any other. Accordingly, we posit direct links between each of the job characteristics (namely, autonomy, task identity, task significance, skill variety, and feedback) and job satisfaction. For the purposes of this study, our focus is on one specific facet of job satisfaction, namely satisfaction with work itself, or intrinsic job dissatisfaction. Our rationale for this focus is that job characteristics themselves reflect attributes inherent in the work itself, rather than factors peripheral to work. As such, we argue that job characteristics are more likely to influence intrinsic than extrinsic (e.g. pay, fringe benefits, promotions, supervision) job satisfaction.

Research on the construct of burnout (Jackson, Schwab & Schuler, 1986; Maslach & Jackson, 1981) has suggested that the three major dimensions of burnout (namely, emotional exhaustion, depersonalization and a lack of performance accomplishments) are also related to job characteristics. Specifically, Maslach & Jackson (1981) found that feedback from the job itself correlated with emotional exhaustion, depersonalization and personal accomplishment. Task significance correlated with personal accomplishment but not the other two dimensions of burnout. Finally, autonomy correlated with all three components of burnout (Jackson *et al.*, 1986). These findings are reflected in our model with paths hypothesized between job characteristics and one component of burnout, personal accomplishment. While previous research has reported significant zero-order correlations between job characteristics and all three dimensions of burnout (e.g. Maslach & Jackson, 1981), we base our precise hypotheses in the current study on the conceptual and statistical interrelationships between these three constructs, and the conceptual

definitions of these scales. Specifically, the personal accomplishments subscale reflects feelings of unhappiness with one's accomplishments at work (Maslach & Jackson, 1981). Conceptually, emotional exhaustion refers to a depletion of emotional resources with attendant negative, cynical perceptions of clients (depersonalization). As such, the lack of performance accomplishments is conceptually closer to perceived job characteristics than are either of the emotional exhaustion or depersonalization components of burnout.

Both emotional exhaustion and depersonalization, however, are conceptually related to role stress. In developing their measure, Maslach & Jackson (1981) reported that both emotional exhaustion and depersonalization varied with caseload and division of work duties while personal accomplishment did not. Emotional exhaustion is related to excessive psychological and emotional demands and is empirically correlated with role conflict and role ambiguity, as is depersonalization (Brookings, Bolton, Brown & McEvoy, 1985; Fimian & Blanton, 1987; Jackson *et al.*, 1986; Jackson, Turner & Brief, 1987). Accordingly, we hypothesize that both emotional exhaustion and depersonalization would be predicted by two role stressors, namely role ambiguity and role conflict.

Finally, role stressors are also hypothesized to predict job satisfaction. Two meta-analyses have supported significant correlations between role conflict, role ambiguity and job satisfaction (Fisher & Gitelson, 1983; Jackson & Schuler, 1985). As already noted, we concentrate on one aspect of job satisfaction (namely satisfaction with work itself or intrinsic job satisfaction) in this study. Therefore direct paths are posited between both of the role stressors and work satisfaction.

Endogenous variables

Consistent with the framework outlined earlier, the current study includes measures of both context-free and job-related mental health. In the current study, job-related affective well-being is represented by work satisfaction, emotional exhaustion and depersonalization, while job-related subjective competence is represented by the personal accomplishments at work component of burnout (Warr, 1987). Job satisfaction is the most frequently studied aspect of job-related affective well-being (Warr, 1987) and is consistently correlated with measures of mental health (e.g. Broadbent, 1985; Sekaran, 1985).

Another aspect of job-related affective well-being is assessed by the emotional exhaustion and depersonalization component of burnout (Maslach & Jackson, 1981). In contrast to job satisfaction, which measures affect along a contented-discontented continuum, the two dimensions of burnout here are ordered along a continuum from depressed to actively pleased (Warr, 1987). Burnout is correlated with measures of context-free mental health such as depression (Meier, 1984) and self-esteem and alienation (Brookings *et al.*, 1985). Moreover, burnout is empirically distinct from, although correlated with, job satisfaction (Maslach & Jackson, 1981) and is a particularly appropriate measure of job-related mental health in the current study which is based on a sample of health care workers.

Finally, the personal accomplishments component of burnout provides an index of job-related subjective competence. It is important to note in this regard that a perceived lack of personal accomplishments at work is not, in itself, an indication of poor mental health. Rather, job-related competence may predict mental health only if failure to cope with job demands affects the individual's affective well-being (Warr, 1987).

We hypothesize that job-related mental health predicts context-free mental health and, in turn, is predicted by job and role characteristics. In this sense, job-related mental health is posited as a mediator of the effects of job characteristics on context-free mental health.

The current study

Based largely on Warr's (1987) review of employment and mental health, a process model is proposed that links job and role characteristics to individual mental health. Warr (1987) proposes a distinction between context-specific and context-free mental health which we extend by hypothesizing that job-related mental health mediates the effects of job and role characteristics on context-free mental health. Job-related mental health, i.e. work satisfaction and burnout, is hypothesized to predict context-free mental health. Based on previous research we hypothesize that both work satisfaction (e.g. Loher *et al.*, 1981) and the personal accomplishments component of burnout (Maslach & Jackson, 1981) will be predicted by the job characteristics identified by Hackman & Oldham (1975). Role stressors, i.e. role conflict and role ambiguity, are hypothesized to predict emotional exhaustion, depersonalization (Jackson *et al.*, 1986; Maslach & Jackson, 1981) and work satisfaction (Fisher & Gitelson, 1983; Jackson & Schuler, 1985).

Thus, we propose and test a conceptual process model linking job characteristics, role stressors and mental health. Empirical support for a model, however, does not preclude the possibility that other models are equally plausible. Accordingly, we contrast the goodness of fit of the proposed model with two alternative models.

First, it is possible that job characteristics and role stress have direct effects on job-related mental health and context-free mental health, but no indirect effects on the latter criterion. Conceptually, this is equivalent to disregarding the mediational component of our model. Operationally, this requires the paths between job-related and context-free mental health to be deleted. In addition to evaluating the goodness of fit of the non-mediational model, we compare the goodness of fit of this non-mediational model with the mediational model presented in Fig. 1. Therefore, we directly address the question of whether mediational effects contribute to our understanding of how job and role characteristics influence context-free mental health.

Secondly, we test the goodness of fit of a model positing an alternate causal ordering. It is possible that individuals experiencing poor context-free mental health may report negative perceptions of job characteristics and role stress and, consequently, lowered job-specific mental health. Consistent with such an argument, perceptions of job and role characteristics are hypothesized to mediate the relationship between context-free and job-related mental health.

A further issue concerns the form of the relationships in the proposed model. Warr (1987) has argued that the relationships between job characteristics and mental health may be curvilinear rather than linear. Yet the use of regression-based analytic strategies, such as our use of path analysis, is based on the explicit assumption of linear relations (Pedhazur, 1982). While the form of specific relationships is an empirical question, our focus on linear rather than curvilinear relationships is justified. The curvilinear relationships identified by Warr (1987) have strong linear components for all but extreme levels, allowing for the possibility of a linear model providing a useful approximation of

the relationship. It is possible that, in a relatively homogenous sample such as in the current study, only the linear component of the hypothesized relations is observable. Accordingly, we retain our focus on linear relationships, but specifically evaluate the assumption of linearity in all analyses reported here.

Finally, as the current study is based on cross-sectional data, our ability to make causal inferences is limited. In particular, we cannot empirically determine the causal sequencing of effects. However, like Broadbent (1985, p. 34), who asserted that 'the job causes the symptoms, not simply vice versa', we argue that it is possible to suggest a causal direction in the relationship between job characteristics and mental health.

Method

Subjects

Questionnaire packages were delivered to approximately 2300 hospital employees, 805 (35 per cent) of whom returned completed questionnaire forms. Listwise exclusion of missing data resulted in usable data from 720 respondents (85 per cent females; 76 per cent full-time employees; 87 per cent unionized employees). Respondents were drawn from all job categories in the hospital with nursing staff comprising the largest single occupational group in the sample (43 per cent).

Instruments

The 12-item General Health Questionnaire (Banks, Clegg, Jackson, Kemp, Stafford & Wall, 1985) was used to provide a measure of context-free affective well-being (Warr, 1987). The General Health Questionnaire (GHQ) is a broad band measure of affective well-being (Warr, 1987) comprising a symptom checklist which is useful in detecting subclinical disturbances of individual mental health. The 12-item form of the GHQ has been demonstrated to be a sensitive instrument within the organizational context (Banks *et al.*, 1980; Barling & Milligan, 1987). Higher scores on the GHQ indicate impaired context-free mental health.

Job-related affective well-being was assessed by the Work Itself subscale of the Job Descriptive Index (Smith, Kendall & Hulin, 1969). The Work Itself subscale provides a measure of intrinsic job satisfaction consistent with our focus on features relevant to the work environment, rather than the employment environment (Warr, 1987). The Emotional Exhaustion and Depersonalization subscales of the Maslach Burnout Inventory (Maslach & Jackson, 1981) were used to measure dimensions of job-related mental health of particular relevance to health care professionals. The Personal Accomplishment subscale of this instrument provides a measure of subjective, job-related competence (Warr, 1987).

Respondents' perceived job characteristics were measured with the 21-item Job Characteristics scale (Hackman & Oldham, 1975). Separate scale scores were derived for skill variety, task identity, task significance, autonomy, feedback from the job itself, feedback from agents and dealing with others. Two of the job characteristic scales (task significance and dealing with people) demonstrated unacceptable internal consistency ($\alpha < .6$) and were excluded from the remainder of the analysis.

Respondents completed the Role Conflict and Role Ambiguity scales developed by Rizzo *et al.* (1970). Although there have been questions about the psychometric adequacy of these two subscales, recent research using structural equation modelling supports their validity (Kelloway & Barling, 1990; Netemeyer, Johnston & Burton, 1990).

Scale means, reliabilities and intercorrelations for all scales are presented in Table 1.

Procedure

Every employee of a large hospital in Ontario received a questionnaire package including the survey, a pre-addressed return envelope and a letter expressing the support of the Chief Executive Officer and of the Executive Committees of the relevant unions. One week after questionnaire distribution a reminder card was sent out to all respondents. All respondents were guaranteed anonymity and confidentiality of results and participation in the study was voluntary.

Table 1. Descriptive statistics, reliabilities and intercorrelations of study variables^a

	M	SD	1	2	3	4	5	6	7	8	9	10	11	12
1. Context-free mental health (GHQ)	2.37	2.13	(.77)											
2. Emotional exhaustion	26.96	12.02	.53	(.89)										
3. Depersonalization	9.85	5.50	.33	.45	(.75)									
4. Personal accomplishment	38.53	9.51	-.28	-.11	-.12	(.82)								
5. Work satisfaction	33.89	10.72	-.45	-.41	-.27	.40	(.79)							
6. Role ambiguity	2.29	1.10	.35	.35	.21	-.15	-.34	(.82)						
7. Role conflict	3.56	1.24	-.24	-.39	-.28	.02	.22	-.35	(.80)					
8. Autonomy	5.19	1.39	-.22	-.21	-.17	.36	.45	-.27	.28	(.70)				
9. Variety	5.63	1.35	-.17	-.02	-.08	.39	.50	-.10	-.01	.38	(.71)			
10. Identity	4.64	1.57	-.15	-.29	-.22	.07	.23	-.28	.28	.31	.09	(.66)		
11. Feedback from job	4.89	1.30	-.25	-.25	-.18	.29	.36	-.30	.17	.40	.27	.30	(.68)	
12. Feedback from co-workers	3.61	1.74	-.16	-.23	-.12	.18	.36	-.24	.23	.30	.19	.19	.43	(.81)

^aInternal reliability (alpha) presented on the diagonal.

Method of data analysis

The current study uses confirmatory path analysis (Pedhazur, 1982) to evaluate both the specific paths and overall fit of the three models described earlier. For each of the three models, we first calculated the path coefficients for the just-identified model through multiple regression analyses. In the just-identified model, all possible direct paths are calculated. Operationally, the just-identified model is calculated by regressing each variable on every variable preceding it in the model. Secondly, we calculated the path coefficients for the over-identified model. The over-identified model comprises only those paths of theoretic interest (see for example Fig. 1). The goodness of fit of the over-identified model was evaluated by calculating Specht's (1979) Q and W statistics. Q is the ratio of generalized variance in the just- and over-identified models and ranges from 0 to 1; values approaching unity indicate a good fit to the data. The sampling distribution of Q is unknown. W , however, is a transformation of Q which is distributed as χ^2 for large samples (Specht, 1979). Consistent with the confirmatory approach to path analysis we did not engage in theory trimming or *post hoc* model modification to improve the fit of any of the models tested here.

Results

For all analyses reported here, examination of the residual plots suggested that the assumption of linearity was tenable.

Path coefficients for the over-identified, theoretical model are presented in Fig. 2. As hypothesized, context-free mental health was significantly ($p < .01$) predicted by job-related affective well-being (i.e. work satisfaction, emotional exhaustion, and depersonalization) and subjective competence (i.e. personal accomplishments at work). The three measures of job-related affective well-being were significantly ($p < .001$) predicted by role conflict and role ambiguity. Job-related subjective competence was

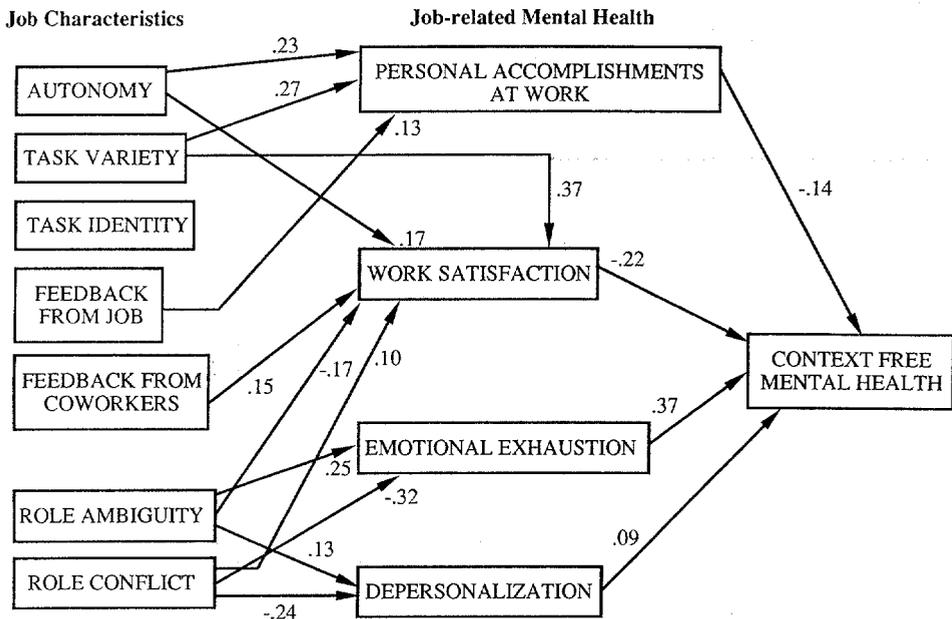


Figure 2. Path coefficients for the over-identified model of mental health ($N = 220$).

predicted by task variety, autonomy and feedback from the job itself. Neither feedback from co-workers nor task identity made a significant contribution to this prediction. Finally, work satisfaction was predicted by autonomy, task variety and feedback from co-workers with neither feedback from the job itself nor task identity making a significant contribution to the prediction.

Table 2 presents a comparison of the variance in each endogenous variable explained by the just- and over-identified models. The over-identified model was able substantially to reproduce the variance explained by the just-identified model, and the over-identified model provided a good fit to the data ($Q = .89$; W [d.f. = 19, $N = 720$] = 35.01, $p > .01$.*

Table 2. Amount of criterion variance accounted for by the just- and over-identified models

Criterion	Just-identified	Over-identified
1. Context-free mental health	38.28%	35.94%
2. Emotional exhaustion	25.52%	22.60%
3. Depersonalization	12.21%	9.77%
4. Personal accomplishments at work	22.63%	22.30%
5. Work satisfaction	41.13%	41.13%

Note. While the model as a whole is over-identified, the prediction of work satisfaction is just-identified and remains invariant across the two models.

Next, we calculated the non-mediational model described earlier. The non-mediational model did not provide a satisfactory fit to the data ($Q = .69$; W [d.f. = 23, $N = 720$] = 112.32, $p < .001$). Comparison of the variance explained by the non-mediational and just-identified models (see Table 3) suggests that the lack of fit emerges from the inability to predict context-free mental health. Thus, while the just-identified model accounted for 38.28 per cent of the variance in context-free mental health, the non-mediational model accounted for substantially less (17.90 per cent) variance.

Finally, we computed path analyses to assess the second alternative model in which context-free mental health was hypothesized to predict individual perceptions of job characteristics and role stress which, in turn, predicted job-related mental health. Again, the fit indices suggested that this model did not provide an acceptable fit to the data ($Q = .61$; W [d.f. = 16, $N = 720$] = 151.13, $p < .001$).

* Although the χ^2 approximation (W) was significant at the conventional level of $p < .05$, it is important to note that (a) the obtained value for W did not exceed the critical value for $p < .01$ and (b) χ^2 approximations are inflated by sample size especially, as in the case of Specht's (1979) W , when sample size enters directly into the calculation of the approximation. Given the sample size in the current study ($N = 720$), the magnitude of both Q and W , the ability of the over-identified model to explain the variance accounted for by the just-identified model, and the superiority of the over-identified (mediational) model to two equally plausible models, we conclude that the proposed model provides a good fit to the data.

Table 3. Amount of criterion variance accounted for by the just-identified and non-mediational models

Criterion	Just-identified	Non-mediational
1. Context-free mental health	38.28%	17.90%
2. Emotional exhaustion	25.52%	22.60%
3. Depersonalization	12.21%	9.77%
4. Personal accomplishments at work	22.63%	22.30%
5. Work satisfaction	41.13%	41.13%

Note. While the model as a whole is over-identified, the prediction of work satisfaction is just-identified and remains invariant across the two models.

Discussion

The primary goal of the current study was the development and evaluation of a process model linking job characteristics and role stressors, job-related mental health and context-free mental health. Based on previous research and theorizing (e.g. Warr, 1987), a theoretical model was developed that provided a good fit to the data and a better fit to the data than a non-mediational model (which did not fit the data). Therefore, the direct effects of role stress and job characteristics on context-free mental health neither add to, nor substitute for, the mediational effects of job-related mental health. In addition, the proposed model fits the data better than a model positing an alternate causal order. These results are taken as support for the proposed model and, in particular, the mediational role of job-related mental health in predicting context-free mental health.

Context-free mental health was predicted by job-related affective well-being (i.e. work satisfaction, emotional exhaustion, and depersonalization) and subjective competence (i.e. personal accomplishments at work). These findings support the central thesis of the current study that job-related mental health mediates the effects of job characteristics on context-free mental health. Of the effects in the model, emotional exhaustion emerged as the best predictor of context-free mental health ($B = .37$). This finding supports previous research reporting strong correlations between emotional exhaustion and depression (Meier, 1984). Despite the strength of this relationship, other measures of job-related mental health, specifically work satisfaction and depersonalization, made substantial and independent contributions to the prediction of context-free mental health.

Personal accomplishments at work were predicted by autonomy, task variety, and feedback from the job. In contrast, emotional exhaustion was predicted by role ambiguity and role conflict. Similarly, depersonalization was predicted by the two role stressors. These findings support the conceptual definitions of these burnout dimensions (Maslach & Jackson, 1981). While emotional exhaustion and depersonalization are thought to result from the psychological demands of working with other people, the sense of personal accomplishments at work emerges from performance of the job itself. Work satisfaction was predicted by both task characteristics and role stressors supporting Locke's (1976) definition of job satisfaction as a sense of affective well-being that results from the ability to achieve valued goals at work.

Previous research has suggested that job characteristics are associated with individual well-being (Wall & Clegg, 1981; Wall *et al.*, 1978, 1990). The current study extends this research by suggesting a process through which task characteristics affect context-free mental health. In particular, our results suggest that perceptions of task characteristics give rise to job-related affective well-being and subjective competence. These mediating variables, in turn, predict context-free mental health. As Wall *et al.* (1978) point out, the job characteristics model (Hackman & Oldham, 1975, 1976) has the laudable characteristic of specifying the sequential causal links which should and should not exist. The current study extends the causal sequence to outcomes not suggested by Hackman & Oldham (1975, 1976). Specifically, the results of the current study suggest that context-free mental health is an outcome of job characteristics and give empirical weight to calls for job redesign as a means of improving mental health (Work in America, 1973). Moreover, and of most importance for future research, the effect of task characteristics on context-free mental health is indirect. As a result researchers should be neither dismayed nor disheartened by zero-order correlations between job characteristics and individual well-being which are small in magnitude or statistically non-significant. The current research suggests that a focus on both processes and outcomes is a more appropriate research strategy than a focus on outcomes alone (e.g. Hunter, 1990).

Several limitations of the current research are apparent. First, the current study is based on cross-sectional data, thereby limiting the strength of causal inferences which can be drawn from these findings. The cross-sectional nature of our data does not allow us to address this point. Previous research findings have supported the causal ordering suggested here by demonstrating that individual well-being is an outcome of changes in job characteristics (Wall & Clegg, 1981; Wall *et al.*, 1990). Nonetheless, longitudinal research and/or research involving quasi-experimental manipulations is needed to assess the effects posited in the current study. Second, there is a need to replicate the findings of the current study in different settings using multiple operationalizations of the constructs in the model. The nature of our sample dictated a focus on job-related burnout as a measure of job-related mental health; burnout is a particularly appropriate measure when samples are drawn from social service settings (Maslach & Jackson, 1981). Other operationalizations of job-related affective well-being (e.g. job involvement, organizational commitment, see Warr, 1987) and job-related competence (e.g. performance ratings, see Warr, 1987) may be more appropriate for samples drawn from other settings. A related concern is our operationalization of context-free mental health. The measure we used focuses on negative mental health (e.g. minor psychiatric symptoms). Future research would be well advised to include measures of positive mental health (Warr, 1987, 1990). Finally, support for the model in the current study does not preclude the possibility that other models are equally plausible. Future research that considered alternate models would further our understanding of the consequences of job characteristics on individual well-being.

The current research may be viewed as an initial test of Warr's (1987) model of employment and mental health. Consistent with this model, we identify job and role characteristics that predict job-related mental health. Moreover, we extend Warr's (1987) propositions by hypothesizing and confirming that job-related mental health mediates the relationship between role stressors and task characteristics on the one hand, and context-free mental health on the other. However, several aspects of Warr's (1987) model

remain unexplored. For example, we focused on only two of the five dimensions of mental health proposed in Warr's (1987) model. Similarly, although the current research focused on linear relationships, Warr (1987) proposes non-linear relationships in his 'vitamin' model. Thus, while the current research draws on Warr's (1987) framework, it does not comprise a comprehensive evaluation of his theory. In particular, our findings of relatively strong linear relations in no way invalidates Warr's (1987) conclusions. Rather, Warr (1987) identifies forms of non-linear relationships that demonstrate linear trends over a certain range. It is possible, therefore, that a linear model provides an adequate representation of the relationships within a relatively homogenous and 'normal' sample.

Our mediational model provides an indication of the way in which job experience indirectly influence mental health. Given the growing importance of mental health as an occupational health and safety issue (Sauter *et al.*, 1990) and our identification of the processes through which individual well-being is influenced by job characteristics and role stressors, further research on the mental health effects of job design is warranted and encouraged.

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