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Abstract

Acceptance, the willingness to experience thoughts, feelings, and physiological sensations without having to control them, or let them determine one's actions, is a major individual determinant of mental health and behavioral effectiveness, in a more recent theory of psychopathology. This two-wave panel study examined the ability of acceptance also to explain mental health, job satisfaction and performance, in the work domain. We hypothesized that acceptance would predict these three outcomes, one year on, in a sample of customer service center workers in the United Kingdom (N=412). Results indicated that acceptance predicted mental health and an objective measure of performance, over and above job control, negative affectivity, and locus of control. Furthermore, these beneficial effects of having more job control were enhanced when people had higher levels of acceptance. Discussion notes the theoretical and practical relevance of this individual characteristic to occupational health and performance.

Most work psychologists maintain that both the design of work (e.g., having job control) and individual characteristics (e.g., negative affectivity) contribute to people's mental health and work performance (e.g., Cooper & Marshall, 1976; Hurrell & Murphy, 1992; Katz & Kahn, 1978; Quick, Quick, Nelson, & Hurrell, 1997). They are not alone. Psychopathologists also posit and test theories of how mental health and effective behavior is promoted, protected, and improved. *Psychological acceptance* (also referred to as *acceptance*) is a major individual determinant of mental health and behavioral effectiveness, as hypothesized by one of the more recent, empirically-based theories of psychopathology (e.g., Hayes, 1987; Hayes, Strosahl, & Wilson, 1999). It refers to a willingness to experience thoughts, feelings, and physiological sensations, especially those which are negatively evaluated (e.g., fear), without having to avoid them, or let them determine one's actions. We hypothesize that acceptance, developed to explain mental health and performance in a way that is most relevant to clinical psychology, can also help us to understand these outcomes, in a context that can inform organizational behavior.

To investigate this possibility, the present two-wave panel study used structural equation models to test the extent to which acceptance predicts mental health, job satisfaction, and work performance, one year on. As the way that work is designed, or organized, also affects these outcomes (e.g., Quick et al., 1997), we wished to examine the predictive effects of acceptance, whilst accounting for those of job control: research consistently shows that this work organization variable is associated with occupational health and productivity (e.g., Terry & Jimmieson, 1999). We were not, however, merely interested in accounting for job control; rather, we hypothesized that acceptance interacts with this work design variable, to predict the three outcomes that we were examining, and we tested this theoretically-based prediction (Bond & Hayes, 2002) in the present study.

Another goal of this research was to determine whether or not mental health, job satisfaction, and work performance also predict levels of acceptance and job control, one year on. Such "reciprocal" relationships run contrary to relevant theories (e.g., Hayes, 1987; Karasek & Theorell, 1990), but, by testing for them, we can examine these unidirectional hypotheses. From all of these analyses, we assessed the extent to which a more recent psychopathology-based theory of mental health and behavioral effectiveness may explain occupational health and performance.

Psychological acceptance at work

Acceptance is a two part process that involves, firstly, a *willingness* to experience all psychological events (i.e., thoughts, feelings, and sensations), without changing, avoiding, or otherwise controlling them (Hayes, 1987; Hayes, Wilson, Gifford, Follette, & Strosahl, 1996). By accepting these internal events, people can, secondly, more effectively use their energies, formerly given over to resignation, avoidance, or control of these events, to *act* in a way that is congruent with their values and goals (Hayes et al., 1996). In other words, acceptance involves the transfer of scarce, attentional resources from controlling internal events to observing one's environment and deciding on, and completing, the right course of action for goal attainment (e.g., paying more attention to task requirements). In order to enact this transfer, people need to be willing to experience even unwanted internal events (e.g., fear), so that they do not use their attentional resources to change or control them; but, instead, to make and enact overt behavioral choices on the basis of what will lead to their own valued goals (e.g., performing well at work), and not on the basis of what emotions or thoughts they may be experiencing.

In psychotherapy, the concept of acceptance is operationalized in Acceptance and Commitment Therapy (ACT; Hayes, 1987; Hayes et al., 1999). ACT promotes acceptance by training people to be aware of their thoughts and feelings, but to base their actions upon their values and goals: not upon the

vagaries of their internal events. Thus, ACT clients are encouraged to *feel* good (i.e., do a good job of feeling fully what is there to be felt), as opposed to feeling *good* (i.e., changing one's goal-directed actions, in order to experience feelings that are evaluated as "good") (Hayes et al., 1996). In this way, clients can more effectively take control of their overt behavior, so as better to realize their own unique goals, or values. Hayes et al. (1999) maintain that these two components of acceptance (i.e., (1) not controlling internal behavior so that (2) one can better control overt actions) promote mental health by, respectively, lessening the impact that negative, private events have on people, and by helping individuals to define and accomplish goals that are meaningful to them. Bond and Hayes (2002) hypothesize that these "willingness-action" components of acceptance also help people receive more satisfaction from their jobs, as well as perform more effectively at work (if they value, and have the goal of, performing well at work).

Consistent with this conceptualization of psychological acceptance, there is a great deal of research that implicates this individual characteristic in a wide range of psychological problems, from substance abuse to depression and suicide (see Hayes et al. (1996) for a review). There is also a large literature that shows an association between acceptance and positive outcome in psychotherapy (see Hayes et al., 1996; Linehan, 1993). It may not be surprising, therefore, that acceptance-based treatments are now used in relation to many types of psychological problems (see Hayes, Jacobson, Follette & Dougher, 1994). Despite its growing popularity in theories of psychopathology, the concept of acceptance has yet to inform models of occupational health and performance. Recent research, however, shows potential benefits for applying acceptance to the work context.

For example, a randomized, controlled experiment by Bond and Bunce (2000) evaluated the effectiveness of an acceptance-based worksite stress management intervention (SMI) in a large media organization. Bond and Hayes (2002) developed this SMI for use in the work environment, from the strategies and techniques found in the psychotherapy version of ACT (i.e., Hayes, et al., 1999). Results

indicated that the ACT SMI improved employees' general mental health (General Health Questionnaire), depression (Beck Depression Inventory), and innovation potential (Propensity to Innovate), relative to a control group. According to Cohen's (1977) criteria for the effect size index of eta-squared (η^2), these improvements ranged from a medium (depression, $\eta^2 = .21$) to large (general mental health, $\eta^2 = .25$; propensity to innovate, $\eta^2 = .43$) magnitude of effect. Moreover, results showed that ACT produced these improvements, because it increased people's acceptance levels. That is, acceptance was the mechanism, or mediator, by which ACT affected levels of general mental health, depression, and propensity to innovate. This suggests that psychological acceptance is very much associated with not only mental health-related variables (e.g., depression), but a performance-related variable (propensity to innovate) as well. This hypothesis is examined in the present study.

Job control and acceptance

Job control is defined, herein, as a perceived ability to exert some influence over one's work environment, in order to make it more rewarding and less threatening (Ganster, 1989). Theories of occupational health and performance have hypothesized that providing people control over their work serves to improve mental health, job satisfaction, and performance (e.g., the job characteristics model (Hackman & Lawler, 1971), the sociotechnical systems approach (e.g., Emery & Trist, 1960), action theory (Frese & Zapf, 1994; Hacker, Skell, & Straub, 1968), and the demands-control model (Karasek, 1979)). In line with these theories of work control and employee health, Terry and Jimmieson (1999) noted, in their review of this research literature, that there appears to be "consistent evidence" that high levels of worker control are associated with low levels of stress-related outcomes, including anxiety, psychological distress, burnout, irritability, psychosomatic health complaints, and alcohol consumption (p. 131). In addition, Bosma, Marmot, Hemingway, Nicholson, Brunner, and Stansfeld (1997) showed that low levels of job control longitudinally predict new reports of coronary heart disease, amongst

London-based civil servants. Furthermore, Bond and Bunce (2001) showed, using a longitudinal, quasi-experimental design, that a work reorganization intervention could improve people's mental health, absenteeism levels, and self-rated performance, by increasing their job control.

We believe that psychological acceptance can moderate this well-established relationship between job control and occupational health and productivity. As noted above, people who do not try to avoid or control internal events have more attentional resources and engage in less avoidant behavior (Bond & Hayes, 2002). They are, therefore, better able to notice the degree to which they have control in a given situation; and, since they are not very avoidant, they may, through trial and error, learn how they can most effectively use this control, in order to act in a way that is consistent with their values and goals (e.g., maximizing their work performance, mental health, and job satisfaction). Clearly, this explanation for an interactive effect of acceptance and job control needs to be empirically examined. Research does suggest, however, that if people can learn to focus on the task at hand (e.g., by learning acceptance), then they are better able to notice and respond effectively to even subtle changes in contingencies of reinforcement (e.g., situations in which they have, and can use, control) (e.g., Catania, Shimoff, & Matthews, 1989; Hayes et al., 1989). The present study tests whether or not job control and acceptance actually interact, in this manner, to affect these three outcomes.

Furthermore, it examines whether or not these outcomes also predict acceptance, job control, and their interaction, one year on. Both theories of acceptance and occupational health (e.g., Bond & Hayes, 2002 and Hackman & Oldham, 1975, respectively) do not suggest such reciprocal relationships; and, consistent with these latter theories, a two-wave panel study by de Jonge, Dormann, Janssen, Dollard, Landeweerd, and Nijhuis (2001) found no longitudinal effects of job satisfaction, job motivation, or emotional exhaustion on job control. To our knowledge, no study has yet investigated the hypothesis that the impacts of acceptance on mental health, job satisfaction, and performance are unidirectional.

Treating negative affectivity and locus of control as potential confounds

The term, negative affectivity, describes an aversive (e.g., angry, scornful, fearful, depressive) emotional style, or trait, that can exist even in the absence of objective stressors (Watson & Pennebaker, 1989). Locus of control describes the extent to which people believe that they influence events in their lives. Those with an internal locus of control perceive that they can manage situations with their decisions and behaviors, whilst those with an external locus of control believe that what happens to them is beyond their influence: a result of luck or fate (Rotter, 1966). People with the latter orientation are thought to be most at risk for experiencing mental ill-health and poor productivity (Spector, 1988).

Research has shown that negative affectivity and locus of control have the potential to bias, or distort, people's self-reports on a wide range of variables, from work characteristics (e.g., job control) to well-being (e.g., mental health, job satisfaction) and coping behaviors (e.g., problem- or emotion-focused coping) (e.g., Parkes, 1991; Siu, Spector, Cooper, Lu, Yu, 2002; Spector, 1986). Such widespread (or "common") biases are problematic, in that they may produce correlations amongst measures (e.g., between those of acceptance and mental health), when the constructs that they represent are not actually associated (e.g., Spector, Fox, & Van Katwyk, 1999). We believe that this confounding potential for negative affectivity and locus of control may appear when testing for associations between acceptance, on the one hand, and mental health and job satisfaction, on the other. Specifically, people with higher levels of negative affectivity, who perhaps already feel depressed or anxious, may discount the extent to which they do accept their unwanted thoughts and feelings. Likewise, people with an external locus of control may underestimate the degree to which they are able to take action (or manage situations), especially in the face of unpleasant internal events. Such cognitive distortions that center around people "minimizing" their abilities, and which result from unhelpful personality characteristics,

have long been documented in the psychopathology literature (e.g., Beck, Rush, Shaw & Emery, 1979; Beck & Freeman, 1990)). As a result of their potential biases, we wish to control for negative affectivity and locus of control, when testing the longitudinal relationships that we are examining in the present study.

Quite apart from any potential biasing effect, we believe that it is important to control for negative affectivity and locus of control, because these are amongst the most heavily researched individual characteristics examined in studies of mental health and job performance (Jex, 1998). Therefore, it is not possible to gauge the incremental validity of the acceptance construct to organizational behavior and occupational health psychology, unless we know the degree to which it can predict mental health, job satisfaction, and job performance, over and above these two individual characteristics.

The present study

Based upon Hayes et al. (1999), Bond and Bunce (2000), and Bond and Hayes (2002), our first hypothesis was that higher levels of acceptance at Time 1 will predict, one year on at Time 2, better mental health, job satisfaction, and performance, even when accounting for job control, negative affectivity, and locus of control. Consistent with Hackman and Oldham (1975) and Karasek (1979), our second hypothesis was that greater job control at Time 1 will predict better mental health, performance, and job satisfaction at Time 2, after controlling for the other predictor variables. We, thirdly, hypothesized that, at Time 1, acceptance will moderate the relationship between job control and the three Time 2 outcomes, such that the benefits of job control will be greater when acceptance is higher than when it is lower. Based upon Hayes (1987) and Karasek & Theorell (1990), our fourth hypothesis was that there is a unidirectional, not a reciprocal, longitudinal relationship from the five predictor variables to the three outcomes. In other words, we predicted that mental health, performance, and job

satisfaction at Time 1 will not predict acceptance, job control, or the interaction between the two, at Time 2. Whilst we control for negative affectivity and locus of control in all our analyses, described below, we do not make any predictions concerning these two potentially confounding variables.

Method

Design and participants

This study constituted a two-wave, autoregressive, cross-lagged panel design in which the same set of participant data was obtained on two occasions, one year apart. These data were taken from a sample of English and Scottish employees who worked in the customer service centers (also referred to as call-centers) of a United Kingdom (UK) financial institution. In order to participate in this study, employees had to have worked for the organization for at least two years. Furthermore, they had to input customer data into a computer, as a primary part of their job. (As noted below, the accuracy of these data entries constituted the performance outcome measure for the study.) Due to constraints on our resources, we were only able to include 800 of the 1,634 non-managerial employees who satisfied these two inclusion criteria. To select these 800, we used the systematic sampling procedures specified by Pedhazur and Schmelkin (1992). That is, following a random start on the list of 1,634 employees who met the inclusion criteria, we selected every second person (i.e., $1{,}634/800 \approx 2$) for inclusion, until we had a sample of 800 workers, to whom we sent questionnaires.

The number of people who completed the first set of questionnaires at Time 1 was 647, or 81% of the initial sample of 800. At the second wave (i.e., Time 2), one year on, 412 people, or 52% of respondents also returned the second, final set. (This percentage does not include 10 people who had returned their final set of questionnaires yet had been promoted to managerial levels between Times 1 and 2. This small group was excluded from the analyses, as they were no longer inputting customer data at Time 2.) The 52% response rate for people who completed both waves is consistent with that of

other, similar, panel studies (e.g., Hagenaars, 1990). Of the final sample of 412, on which the following analyses were based, 68% were women, the mean age was 30.87 (SD = 9.58) years, 66% worked part-time, and they had worked for the organization for a mean of 5.23 (SD = 1.97) years. As inputting customer data is an "entry-level" position, none of this sample had previously had a non-data entering job at the organization.

Chi-square and ANOVA analyses revealed no significant Time 1 differences on any variable reported below, between participants who dropped-out after Time 1 and those who completed both waves of questionnaires. Furthermore, path analyses (through LISREL 8.30, Jöreskog & Sörbom, 1996) indicated that the causal relationships, at Time 1, were statistically similar between those who dropped out after the first wave and those who participated in both waves. It is unlikely, therefore, that the relationships, amongst the variables under consideration, differ systematically between survivors and dropouts.

Measures

Predictor variables

Acceptance and Action Questionnaire (*AAQ*; Hayes et al., submitted). The 16 items that comprise this scale are shown in Table 1. They assess people's willingness to accept their undesirable thoughts and feelings, whilst acting in a way that is congruent with their values and goals. A seven-point Likert scale labeled "Never true" (scored 1) to "Always true" (scored 7) is used for responses. Higher scores indicate greater psychological acceptance. In this study, Time 1 and 2 alpha coefficients for this measure were .79 and .72, respectively.

Although the AAQ is a relatively new measure, research thus far indicates that it has good psychometric properties (see Hayes et al., submitted). For example, regarding convergent validity, Hayes et al. (submitted) found that, in two studies, the AAQ was significantly, and negatively,

associated with the White Bear Suppression Inventory (WBSI; Wegner & Zanakos, 1994). The WBSI measures people's tendency to suppress (i.e., not accept) unwanted thoughts, which is part of what the AAQ assesses. In addition, two studies (Roemer & Salters, in press; Tull & Roemer, in press) showed that less psychological acceptance was significantly associated with greater "fear of emotions", as measured by the Affective Control Scale (Williams, Chambless, & Ahrens, 1997). Such a relationship would be expected, as people who do not want to experience, or whose actions are ruled by, unwanted emotions (e.g., anxiety or depression), probably fear these affective experiences. Furthermore, Donaldson and Bond (in press) found that the AAQ was significantly, and positively, associated with the Clarity scale of the Trait Meta-Mood Scale (TMMS; Salovey, Mayer, Goldman, Turvey and Palfai, 1995). This TMMS scale assesses the degree to which people allow themselves to experience, and hence not avoid, both desirable and undesirable feelings (a concept that is similar to the willingness scale of the AAQ). The criterion-related validity of the AAQ has been demonstrated in respect to Generalized Anxiety Disorder and Post-Traumatic Stress (Roemer & Salters, in press; Tull & Roemer, in press), as well as depression, general mental health and job performance (Bond & Bunce, 2000). Finally, regarding construct validity, the AAQ exhibits no evidence of response bias, when considered in relation to social desirability (Hayes et al., submitted).

We conducted a confirmatory factor analysis on the AAQ, using the current data set, in order to investigate further the construct validity of this measure. Consistent with the dual component conceptualization of acceptance (i.e., willingness and overt action) (Hayes et al., 1999), we found that a two factor solution was a good fit to these data: χ^2(d.f. = 101) = 233, p = .020, comparative fit index (CFI) = .97; root mean square error of approximation (RMSEA) = .05. Specifically, "willingness to experience internal events" and "ability to take action, even in the face of unwanted internal events" constituted the two factors. Table 1 shows the standardized path coefficients, or estimates, for the factor indicators. As the two factors were highly correlated (r = .71), a second-order factor (e.g., acceptance)

is strongly indicated but cannot be estimated for reasons of statistical identification (e.g., Kline, 1998). In summary, whilst more psychometric research is required on the AAQ, we believe that extant findings indicate that the construct and criterion-related validities of this measure are sufficient for its use in this study.

Job control (Ganster, 1989). This 22-item scale assesses a range of areas over which people can have control at work: variety of tasks performed, the order of task performance, pacing, scheduling of rest breaks, procedures and policies in the workplace, and arrangement of the physical environment. Each item (e.g., "How much control do you have personally over the quality of your work?") is rated on a five-point Likert scale that is labeled "Very little" (scored 1) to "Very much" (scored 7). Higher scores indicate greater levels of control. Psychometric properties of this scale appear good and reveal a single factor of control (Ganster, 1989), and, in the present study, alpha coefficients for this scale were .88 and .90 for Times 1 and 2, respectively.

Predictor variables that are included as controls

Negative affect schedule (*Negative affectivity*; Watson, Clark, & Tellegen, 1988). This scale lists ten adjectives that describe negative moods (i.e., distressed, upset, guilty, scared, hostile, irritable, ashamed, nervous, jittery, and afraid). Participants indicate the extent to which they "generally" feel each mood, on a scale that is scored from "Very slightly or not at all" (scored 1) to "Extremely" (scored 5). Higher scores indicate greater levels of negative affectivity. Watson et al. (1988) show that this measure demonstrates good psychometric properties, and, in the present study, Time 1 and Time 2 alpha coefficients were .87 and .89, respectively.

Work locus of control scale (*Locus of control*; Spector, 1988). This sixteen-item measure assesses the extent to which people expect that rewards, reinforcements, and other outcomes in the work domain, are controlled either by one's own actions or by others. Responses to each item (e.g., "Promotions are usually a matter of good fortune") are scored on a scale that ranges from "Disagree

very much" (scored 1) to "Agree very much" (scored 6). Higher scores indicate a greater external locus of control. Research indicates that this measure predicts work outcomes (e.g., job satisfaction) better than Rotter's (1966) general locus of control scale (Spector, 1988). Alpha coefficients at Time 1 and Time 2 were .73 and .77, respectively.

Outcome variables

Computer input errors. The financial organization keeps records on the number of computer input errors that call-center personnel make, and do not immediately correct, when working on client accounts. As the organization maintains that any error has the potential to affect monetary movements, and account balances, all errors are recorded, whether they are "small" (e.g., ending a sentence with a comma rather than a period) or "large" (e.g., mismatching a client name and account number). In order to conform to UK law and industry best practice, there are a number of procedures set up to identify input errors. The main ones are: computer programs, employees involved in "clearing" (or monitoring and processing) account transactions, internal auditors, external auditors, and customers. Company, and government, policy mandates that every input error be traced back to the employee who made it, which, due to strict audit trails, is not difficult to do. For the purposes of this study, the ratio of "number of errors per year" to "number of hours worked" was established for each participant, in order to control for full-time and part-time working. As this ratio is considered confidential by the host organization, we standardized this value for the purposes of data analyses, below.

General Health Questionnaire-12 (*GHQ*; Goldberg, 1978). This is a 12-item scale, typically used as a measure of general mental health (McDowell & Newell, 1996). Here the Likert method of scoring was employed (see Banks, Clegg, Jackson, Kemp, Stafford, & Wall, 1980), where each item (e.g., "Have you recently…." "Lost much sleep over worry") was scored 0 ("Not at all") to 3 ("Much more than usual"). Higher scores indicate greater mental ill-health. Alpha coefficients were .84 and .85 at Time 1 and Time 2, respectively.

General Job Satisfaction (Hackman & Oldham, 1975). This 5-item scale (e.g., "People on this job often think of quitting" (reversed format)) measures the degree to which people are satisfied and happy with their job. Responses are recorded on a Likert scale labeled "Disagree strongly" to "Agree strongly", scored 1 to 7 respectively. Higher scores indicate greater job satisfaction. Psychometric properties for this scale are good (Hackman & Oldham, 1975), and we found that alpha coefficients at Time 1 and Time 2 were .79 and .78, respectively.

Procedure

Each of the 800 people selected to participate at Time 1 received an envelope that contained a cover letter that explained the study, and it asked them to print their name, sign, and date the letter in the appropriate places, if they wished to participate. This letter was attached to the questionnaires, and we included a "freepost" envelope that allowed participants to send their questionnaire pack, which included their signed consent, directly to us, free of charge to themselves. The letter explained that the purpose of the study was to "understand how people's attitudes, and the way their work is managed, affect well-being and performance levels at work". The letter made clear that they did not have to participate in this study, and that no one within their company would know whether or not they did so.

The letter also noted that, by signing the form, and thus consenting to participate in the study, their computer input error rates for the past year would be obtained by the research team. Pay bonuses were based, in part, upon these rates, and employees understood that financial law and practice meant that these rates were very important and seen by many people within and outside the organization. For these reasons, we believe that our access to such data was not seen as very controversial. The letter emphasized that their error rates, and their responses to the questionnaires, would be treated as confidential, and no one within their organization would see how any individual responded to the questionnaires. The letter also noted that any report to the organization, or anyone else, would only

present summary data. Furthermore, the letter provided contact details for the first author, in the event that they wanted their data removed from the database, if they later decided that they did not wish to participate in the study. Finally, the Time 1 letter stated that they would be invited to complete the same questionnaires, and allow us to obtain their error rates again, in one year's time. At Time 2, each participant had to sign a second consent form, in order to continue their participation in the study. The covering letters, and consent procedures, were consistent with the United Kingdom's Data Protection Act, and they were approved by the organization's human resource department and trades unions.

Data analysis

We tested our hypotheses by fitting, and comparing, three nested path analysis models (with LISREL 8.30), all of which can be seen in Figure 1. Following recommendations by Bollen (1989), Jöreskog (1979), Rogosa (1979), and Kline (1998), the first model that we specified was a baseline one, in which all of the Time 2 variables were predicted only by their Time 1 scores (i.e., their autoregressions). This model constitutes the most parsimonious explanation for Time 2 scores; thus, a more complex account (or model) of what predicts mental health, job satisfaction, and performance at Time 2 must provide a better fit to our data, in order for us to accept it (e.g., Kline, 1998). Regarding this baseline model, we allowed the disturbances (or residual errors) of the endogenous variables, found at Time 2, to correlate. We also allowed the exogenous variables, located at Time 1, to correlate (Jöreskog, 1979).

Our hypotheses, of course, required us to add further paths, or associations, to the baseline model (or Model 1). In particular, our first three hypotheses were, respectively, that acceptance, job control, and their cross-product interaction term, each predicts all of the Time 2 outcomes: mental health, performance, and job satisfaction. To test these hypotheses, we added, to Model 1, cross-lagged structural paths from each of the five Time 1 predictors to each of the three Time 2 outcomes, which

resulted in Model 2 (see Figure 1). If the goodness of fit of this latter model was better than that of Model 1, we could then conclude that it better represented our data. We would then have the statistical justification to examine the significance levels of the path coefficients from each of the Time 1 predictors to each of the Time 2 outcome variables. (We should note, here, that the "acceptance x job control" interaction term, seen in Figure 1, is used to test the hypothesis that acceptance interacts with job control to predict each of the three Time 2 outcomes. This interaction term can only serve to test such a moderator hypothesis, if acceptance and job control are also included in the model, in order to partial their main effects from their product (see Kline, 1998).

Our fourth hypothesis was that there is a unidirectional, not a reciprocal, longitudinal relationship from the five predictor variables to the three outcomes. To test this prediction, we created Model 3, in which added to Model 2, paths from each of the Time 1 outcomes to each of the five predictor variables at Time 2 (see Figure 1). If the fit of this latter, reciprocal, model was worse than that of the former, we could conclude that there was no evidence for a reciprocal relationship between the predictors and outcomes. Likewise, if the fit of Models 2 and 3 were equal, parsimony would lead us to the same conclusion, as there would be no statistical benefit of having reciprocal paths in a model (e.g., Kline, 1998).

As can be seen in Table 2, there were no significant correlations between the demographic variables that we assessed (i.e., age, gender, and organizational tenure), on the one hand, and any of the predictor and outcome variables, on the other. We did not control, therefore, for these demographic variables, in the three models that were just described.

Results

Bivariate within-time, and test-retest, correlations are displayed in Table 2, and these are consistent with the relevant theories, research, and hypotheses, noted above. Means and standard

deviations are also shown in Table 2. Standardized path coefficients are presented in Table 4, and an interpretation of their magnitudes, discussed presently, are based upon the recommendations of Cohen (1988). In particular, coefficients of .10, .30, and .50 represent small, medium, and large effects, respectively.

Model comparisons

Covariance matrices were used to analyze the following structural equation models, and full information maximum likelihood (FIML) estimation was used to assess their fit. Table 3 shows the three, nested models, noted above, that we evaluated, and the comparisons that we made between Models 1 and 2 and Models 2 and 3. The difference in chi-squares, and degrees of freedom, between any two models that are compared can be used to test the statistical significance of the difference between the fit of the two models (Jöreskog & Sörbom, 1996). It is this chi-square difference test that we used in our model comparison analyses.

To examine our first three hypotheses, we began by comparing the relative fit of Models 1 and 2. Model 1 was the baseline one in which we specified autoregressions, only; and, we formed Model 2 by adding cross-lags from the five Time 1 predictors to the three Time 2 outcomes. As can be seen in Table 3, the chi-square difference test between these two models indicated a significantly lower chi-square, or better fit to the data, for Model 2. Indeed, the chi-square to degrees of freedom ratio, which is 28.54/25 = 1.14, suggests a very good fit for Model 2 (Bollen, 1989), which is a conclusion supported when considering other important fit indices that account for sample size (i.e., CFI = .99) and number of specified parameters, or model complexity (i.e., RMSEA = .04) (Hu & Bentler, 1998; Schumacker & Lomax, 1996).

The significantly lower chi-square for Model 2 than for Model 1 provides us with statistical justification to examine the significance of the standardized paths that run from the Time 1 predictors

to the Time 2 outcomes. These partial regression coefficients are presented in Table 4; and, consistent with the first hypothesis, they indicated that greater psychological acceptance at Time 1 predicted better mental health and performance at Time 2. The magnitude of these significant effects were, respectively, medium and moderately small (i.e., at .18, approximately half way between small and medium). Contrary to the first hypothesis, however, acceptance at Time 1 was not associated with job satisfaction at Time 2. As predicted in the second hypothesis, higher levels of job control at Time 1 predicted greater levels of mental health, performance, and job satisfaction at Time 2. The sizes of these job control effects were, respectively, moderately small, small, and medium. When comparing the relative, standardized effects of acceptance and job control, acceptance was a significantly better predictor of mental health ($z = 1.99$, $p < .05$) but not of job performance.

Hypothesis three proposed an interaction between acceptance and job control, such that the benefits of job control will be greater when acceptance is higher than when it is lower. Following Cohen and Cohen (1983), acceptance and job control scores were standardized, and the main effects for these variables were partialled from their product to create the interaction term. As a result, this interaction term can be directly interpreted (Cohen & Cohen). As can be seen in Table 4, the Acceptance x Job Control path coefficient is, as predicted, significant and positive for both mental ill-health and input errors. This indicates that the beneficial effects of having more job control, in terms of better mental health and performance, are enhanced when people have higher levels of acceptance. The magnitude of the interaction effect, is medium for mental health and moderately small for performance. Contrary to hypothesis three, the path coefficient from the Acceptance x Job Control interaction to job satisfaction was not significant.

When comparing the relative, standardized effects of the Acceptance x Job Control interaction with the other two predictor variables, results indicate that the interaction is a better predictor of mental health than is acceptance ($z = 1.97$, $p < .05$) and job control ($z = 2.60$, $p < .05$). Similarly, this

interaction is a better predictor of job performance than is job control ($z = 2.03$, $p < .05$), but it is statistically just as good as acceptance.

The fourth hypothesis was that there is a unidirectional, not a reciprocal, longitudinal relationship from the five predictor variables to the three outcomes; thus, mental health, computer input errors, and job satisfaction at Time 1 should not predict acceptance, job control, the interaction between the two, at Time 2. To test this hypothesis, we compared Model 2 (with autocorrelations and cross-lags from the Time 1 predictors to the Time 2 outcomes) with Model 3 (which is the same as Model 2, with the exception of additional paths from each of the Time 1 outcomes to each of the five predictors at Time 2). As can be seen in Table 3, the chi-square for Model 3 is not significantly different from that of Model 2. This indicates, as hypothesized, that the effects of the predictors on the outcomes is unidirectional, not reciprocal (Kline, 1998). (This finding is, in fact, consistent with results that show no significant paths from any of the outcomes at Time 1 to any of the predictors at Time 2 (See Table 4).)

Finally, negative affectivity and locus of control functioned as control variables in this study; and, the impacts of them can be seen in Table 4. Specifically, higher levels of negative affectivity at Time 1 significantly predicted greater mental ill-health, computer input errors, and job dissatisfaction at Time 2; and, a greater external locus of control at Time 1 predicted higher levels of mental ill-health at Time 2. Importantly though, the results in relation to Hypotheses 1 to 4 were obtained having statistically controlled for these two variables.

Discussion

This two-wave panel study examined the longitudinal effects of psychological acceptance on mental health, job satisfaction, and work performance, amongst customer service center employees in a

financial organization. In assessing the impact of this variable, we accounted for job control, and two potential confounds: negative affectivity and locus of control.

Acceptance and its interaction with job control

As predicted by Hayes' (1987; Bond & Hayes, 2002) theory, results indicated that higher acceptance levels predict better mental health and performance, one year on. Interestingly though, and as hypothesized, results also showed that acceptance interacts with job control to affect these two outcomes. This work organization characteristic is one of the most important ones that is identified by occupational health and performance theories (e.g., Emery & Trist, 1960; Frese & Zapf, 1994; Hackman & Lawler, 1971; Karasek, 1979), and the research that investigates them (see Terry and Jimmieson, 1999 for a review). Findings from this study suggested that higher levels of acceptance at Time 1 serve to increase the association between higher levels of job control at Time 1 and better mental health and performance at Time 2.

This strengthening effect is consistent with the theory of acceptance (see Hayes et al., 1999), described above. It states that people who do not try to avoid or control psychological events have more attentional resources and engage in less avoidant behavior (Bond & Hayes, 2002). In the work environment, these people are better able to notice the degree to which they have control in a given situation; and, since they are not very avoidant, they may, through trial and error, learn how they can most effectively use the control that they have, in order to promote their mental health. Through this same "trial and error" mechanism, they can also maximize their work performance, *if they value, and have the goal of, performing well at work.* We believe that most of the present sample shared the goal of performing well at work, as we defined it in this study (i.e., number of computer input errors). Specifically, people who wanted to keep their job had to meet a number of strenuously enforced performance targets, one of which included the number of computer input errors they made. As the

mean tenure of this sample of employees was over five years, we believe that it is reasonable to assume that, by their very survival at the company, they accepted the organizationally-specified goal of minimizing computer input errors.

The results for acceptance in this study reflect the findings from a randomized controlled outcome study by Bond and Bunce (2000), noted above. It showed that a training program improved people's mental health, and their propensity to be innovative in their job, because it increased their acceptance levels. In other words, acceptance mediated the changes in mental health and propensity to innovate, in that study. This finding is consistent with results from the present study that demonstrated that acceptance can predict, one year on, mental health and another work performance indicator, computer input errors.

Finally, consistent with acceptance theory (e.g., Hayes, 1987; Hayes et al., 1999), results indicated that the longitudinal effects of acceptance on mental health and performance that were seen are unidirectional. In that, mental health, input errors, nor job satisfaction at Time 1 was associated with acceptance at Time 2. We are not aware of any previous study that has tested this unidirectional hypothesis.

Job control

In addition to its interaction with acceptance, job control also produced several main effects. Specifically, higher job control levels at Time 1 predicted better mental health, job satisfaction, and performance at Time 2. These main effects for job control are consistent with models of occupational health and performance (e.g., Hackman & Lawler, 1971; Karasek, 1979). There is also a large literature that shows positive relationships between job control and outcomes centering around occupational health and productivity (see Terry and Jimmieson (1999) for a review.

Consistent with theories of occupational health and performance (e.g., Hackman & Lawler, 1971; Karasek, 1979), our results indicated that the longitudinal effects of job control on mental health, performance, and job satisfaction are unidirectional. In that, consistent with the findings of de Jonge et al. (2001), noted above, we found that none of these three outcomes at Time 1 predicted job control at Time 2.

Job satisfaction

Results indicated a significant, positive, bivariate correlation between acceptance and job satisfaction at both Time 1 (r=.26) and Time 2 (r=.23). Contrary to our hypotheses, however, we did not find that acceptance longitudinally predicted job satisfaction, either directly, or indirectly through an interaction with job control. To understand this discrepancy, it is helpful to consider the path analytic model that we used to test for this association (see Figure 1). Its specification meant that the relationship between acceptance at Time 1 and job satisfaction at Time 2 was calculated, after controlling for relationships that the other predictors have with these two variables (see Kline, 1998). One notable association that would have been accounted for is the fairly large bivariate correlation between job control and job satisfaction (i.e., r=.54 at Time 1 and r=.53 at Time 2). Given this strong relationship, it is possible that Time 1 acceptance could not account for a significant amount of residual variance in job satisfaction, after job control was partialled.

In other words, acceptance may well be associated with job satisfaction, but this relationship becomes non-significant once job control, a more important predictor of job satisfaction, is accounted for. Such an explanation would also be consistent with the finding that acceptance did not moderate the significant relationship between job control at Time 1 and job satisfaction at Time 2. That is, since job control is substantially more important than acceptance in predicting job satisfaction, the effect of this latter predictor will not impact the effect of the former one, in its association with job satisfaction.

Negative affectivity and locus of control as potential confounds

We treated negative affectivity and locus of control as possible confounds in this study, and thus controlled them. In the event, bivariate correlations, and path analysis, results both indicated that these two individual characteristics were associated with acceptance, and other predictors and outcomes. Thus, including them in the study allowed us to control for any spurious associations that they may have caused between our variables of interest. We should note, though, that the degree to which personality variables, and negative affectivity in particular, function as substantive variables that should not be controlled, or as biases that should be controlled, has received growing attention recently (e.g., Spector, Fox, & van Katwyk, 1999). We chose to take the latter, more conservative, approach in this study, so that we could understand the role of acceptance in predicting the outcomes, over and above the contribution of negative affectivity and locus of control. In so doing, we appeared to demonstrate incremental validity of acceptance, in terms of its ability to predict mental health and job performance, both directly and when interacting with job control. As a result, it appears that the predictive effects of acceptance are independent of those that stem from negative affectivity and locus of control.

Although we treated negative affectivity and locus of control only as confounding variables in this study, it is useful to note that they did show expected relationships with the outcomes that we examined. Specifically, higher negative affectivity at Time 1 predicted greater levels of mental ill-health, job dissatisfaction and performance at Time 2. These findings for the first two outcomes are consistent with those from previous research (e.g. Brief & Roberson, 1989; DeNeve & Cooper, 1998; Munz, Huelsman, Konold, & McKinney, 1996; Watson and Slack, 1993). We are not aware, however, of another study that has examined negative affectivity as a longitudinal predictor of an objective, work performance index. Also, consistent with prior research (e.g., Jex, 1998; Parkes, 1991; Spector, 1982)

we found that people with a greater external locus of control at Time 1 experienced lower levels of job satisfaction at Time 1, and worse mental health at Time 2.

Limitations and conclusions

One potential limitation of our study concerns the extent to which our findings generalize to other populations. Our sample was fairly homogenous, in that it comprised only non-managerial customer service center personnel, who worked for one financial services organization. This single occupation and organization sample, constituted by people who were all in a very narrow grade (and pay) range, minimized potential confounds to our data (e.g., socio-economic status). It also, importantly, permitted us to obtain a very objective performance rating for each participant (i.e., computer input errors). Despite these desirable advantages, such homogeneity, inevitably, has its downsides. For example, it does not allow us to comment upon the generalizability of our findings to other industries, other financial services organizations, or even to managers within the organization in which our study was conducted. As a result, future studies that examine the impact of acceptance on workplace variables may wish to use a population that complements the one that we studied.

Subsequent studies examining acceptance in the workplace would also do well to control for other, potentially confounding, dispositional variables that may influence the mind set of questionnaire respondents. As indicated above, we believe that negative affectivity and locus of control are two such variables, and indeed results support this contention, but there are certainly others (e.g., self-efficacy). Due to constraints on workers' time, no study can examine every potential confound, so it is important for future ones to investigate additional possibilities.

In conclusion, there are three primary implications of these findings to work psychology and organizational behavior. First, it would seem that acceptance is an important longitudinal predictor of both mental health and performance, even when accounting for job control, negative affectivity, and

work locus of control. This suggests that Hayes' (1987) theory of psychological acceptance, which attempts to explain mental health and performance in a way that is most relevant to clinical psychology, can also help us to understand these outcomes, in a context that is directly pertinent to organizational behavior (e.g., when examining its interaction with job control to predict job performance). Second, as the beneficial effects of having more job control were enhanced when people had higher levels of acceptance, it would appear that any work reorganization program that attempts to increase employee control may also wish to increase their acceptance levels.

Relatedly, and finally, it may be helpful to assess and enhance acceptance, when trying to find ways to improve mental health and productivity at work. Indeed, this implication is consistent with the findings of Bond and Bunce (2000) who showed that acceptance was the mechanism by which an SMI improved mental health and propensity to innovate, in a media organization. Thus, there is now both a longitudinal panel study and a longitudinal, experimental outcome study that indicate the importance of psychological acceptance to mental health and performance in different organizations, within different industries. If further research yields similar findings for acceptance, we may find it theoretically and practically useful to integrate this individual characteristic into models of occupational stress and productivity.

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Table 1.

Factorial structure of the Acceptance and Action Questionnaire (AAQ)

AAQ items	Factor	Standardized path coefficients
I try to suppress thoughts and feelings that I don't like by just not thinking about them.*	←Willingness	.73
It's OK to feel depressed or anxious.	←Willingness	.42
I try hard to avoid feeling depressed or anxious.*	←Willingness	.58
If I could magically remove all the painful experiences I've had in my life, I would do so.*	←Willingness	.61
I rarely worry about getting my anxieties, worries, and feelings under control.	←Willingness	.69
Anxiety is bad.*	←Willingness	.29
I'm not afraid of my feelings.	←Willingness	.67
I am in control of my life.	←Action	.54
In order for me to do something important, I have to have all my doubts worked out.*	←Action	.77
If I get bored of a task, I can still complete it.	←Action	.51
Worries can get in the way of my success.*	←Action	.72
I should act according to my feelings at the time.*	←Action	.61
I am able to take action on a problem even if I am uncertain what is the right thing to do.	←Action	.38
If I promised to do something, I'll do it, even if I later don't feel like it.	←Action	.62
When I feel depressed or anxious, I am unable to take care of my responsibilities.*	←Action	.55
Despite doubts, I feel as though I can set a course in my life and then stick to it.	←Action	.69

Note. Willingness = Willingness to experience unwanted events; Action= Ability to take action, even in the face of unwanted internal events; *= items reversed for scoring purposes; all coefficients are significant at the $p < .01$ level.

Figure caption

Figure 1.Three nested path analysis models

Note. As we are model building, each model retains the paths specified in the previous one(s). The models specify correlations amongst the Time 1 variables, and correlations amongst the disturbances.

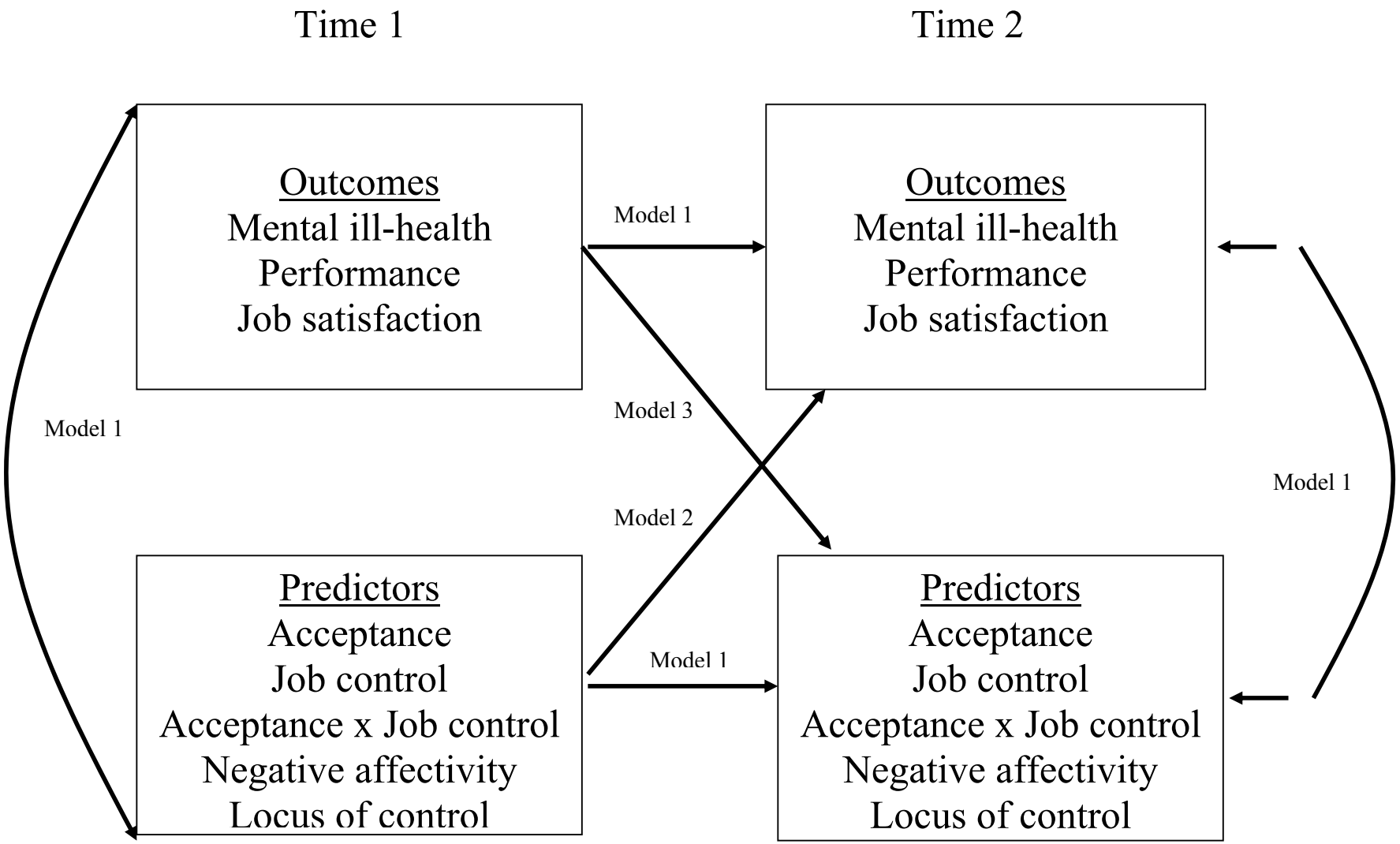
Time 1
Time 2
Outcomes
Mental ill-health
Performance
Job satisfaction
Outcomes
Mental ill-health
Performance
Job satisfaction
Predictors
Acceptance
Job control
Acceptance x Job control
Negative affectivity
Locus of control
Predictors
Acceptance
Job control
Acceptance x Job control
Negative affectivity
Locus of control
Model 1
Model 1
Model 3
Model 2
Model 1
Model 1

Table 2

Means, standard deviations, and bivariate correlations (N=412)

Variable	Means (T1)	Means (T2)	1	2	3	4	5	6	7	8	9	10
1. Mental ill-health	15.9 (4.13)	14.7 (4.26)	**.56****	-.35**	.35**	-.61**	.44**	.39**	-.28**	.08	.09	-.04
2. Job satisfaction	4.51 (1.06)	4.64 (1.28)	-.34**	**.56****	-.21**	.26**	-.28**	-.21**	.53**	-.02	.12	.10
3. Computer input errors	0 (1)	0 (1)	.31**	-.26**	**.66****	-.30**	.24**	.11	-.18*	.05	.05	.07
4. Acceptance	58.61 (12.65)	58.14 (11.18)	-.57**	.23**	-.34**	**.72****	-.36**	-.44**	.21**	-.11	.14	-.10
5. Negative affectivity	18.66 (5.07)	18.85 (5.82)	.48**	-.24**	.20**	-.34**	**.76****	.23**	-.09	-.09	-.12	-.03
6. Locus of control	38.05 (9.02)	38.17 (8.96)	.33**	-.16*	.08	-.48**	.19**	**.57****	-.12	-.12	-.05	.03
7. Job control	2.98 (3.85)	2.95 (3.70)	-.25**	.54**	-.17*	.26**	-.13	-.14*	**.59****	-.02	.12	.10
8. Age	30.87 (9.58)	31.87 (9.58)									.24**	.41**
9. Gender												.17**
10. Tenure in organization	5.23 (1.97)	6.23 (1.97)										

Note. Coefficients above the diagonal represent intercorrelations at Time 1, those below Time 2, and those on the diagonal are intercorrelations between a variable at Time 1 and 2. T1 = Time 1; T2 = Time 2; values in parentheses are standard deviations. Computer input errors were standardized. Higher scores relate to greater external locus of control. For the gender variable, females were coded 1 and males 2.

* $p < .05$. ** $p < .01$.

Table 3

Fit statistics and chi-square difference tests

Model	χ^2	d.f.	CFI	RMSEA	Comparison	$\Delta\chi^2$	Δd.f.
1. Stability, no cross-lags	97.85***	40	.95	.08			
2. Cross-lagged:	28.54	25	.99	.04	Model 1 vs. 2	69.31***	15
T1 Predictors → T2 Outcomes							
3. Reversed cross lagged:	31.68***	10	.99	.05	Model 2 vs. 3	3.14	15
T1 Predictors → T2 Outcomes T1 outcomes → T2 Predictors							

Note. N = 412; CFI = Comparative fit index; RMESA = Root mean square error of approximation; T1 = Time 1; T2 = Time 2

*** $p < .001$ for two-tailed tests.

Table 4

Standardized path coefficients for Model 2

	Outcome variables		
Predictor variables	Mental ill-health	Computer input errors	Job satisfaction
Acceptance	-.32**	-.18*	.02
Job control	-.21**	-.11*	.35**
Acceptance x Job control	.41**	.22**	.04
Negative affectivity	.27**	.10*	-.09*
Locus of control	.07*	.00	-.05

Note. Higher scores relate to greater external locus of control

* $p < .05$. ** $p < .01$.