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IS HIGH EMPLOYEE TURNOVER REALLY HARMFUL? AN EMPIRICAL TEST USING COMPANY RECORDS

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We tested the hypothesis that employee turnover and firm performance have an inverted U-shaped relationship: overly high or low turnover is harmful. Our analysis was based on economic performance data from 110 offices of a temporary employment agency. These offices had high variation in turnover but were otherwise similar, allowing control for important intervening variables. Regression analysis revealed a curvilinear relationship; high turnover was harmful, but the inverted U-shape was not observed with certainty.

We[1] are not the first to conclude that a remarkable imbalance exists in the literature on employee turnover. While much has been written about the determinants of turnover, little has been published about its effects. The research literature is dominated by analyses in which turnover is treated as the *dependent* variable (e.g., Griffeth & Hom, 1995; Lee & Mowday, 1987; Morrow, McElroy, Laczniak, & Fenton, 1999). In general, researchers have set out to define factors that predict some empirical measurement of actual turnover, or they have used an indicator such as individuals' intentions to leave a job, or both (Mitchell, Holtom, Lee, Sablynski, & Erez, 2001).

Studies that treat employee turnover as an *independent* variable are relatively scarce. This imbalance in the research on employee turnover was noted as early as 1982, when Mobley wrote that "relative to the causes of turnover, consequences have been underemphasized" (Mobley, 1982: 31). In 1980, Staw explicitly pointed out the potential danger of a research practice that concentrates on the causes of employee turnover while neglecting its effects: such research is based on the assumption that turnover is an important organizational problem and should be dealt with accordingly. Hence, potential positive effects for organizations are overlooked (Staw, 1980). Research on turnover has not really changed direction since then. In 1989, Mueller and Price again pleaded for research into the consequences of turnover rather than into its determinants. Nevertheless, in the *Human Resource Management Review*'s 1999 special issue on employee turnover, all papers treated turnover as a dependent variable and not as an independent one. "While thousands of studies have investigated why employees choose to leave their jobs, very little research has directly examined the organizational consequences associated with voluntary employee turnover," one of the authors observed (Williams, 1999: 549). In another journal, we have read this: "While there is an immense literature covering the subject of personnel turnover, there is a paucity of writing on the impact of turnover on the organization" (Hutchinson, Villalobos, & Beruvides, 1997: 3202). It is significant that neither of these articles mentions even one relevant title.

Even Griffeth, Hom, and Gaertner's (2000) meta-analysis of the domain, which they described as "a final review of turnover research conducted in the 20th century" (2000: 463), was explicitly limited to the causes of turnover, thereby completely neglecting its effects. We agree with Hutchinson and his colleagues that "this dearth of studies on the impact of turnover is especially surprising, since it is presumably the assumed impact of turnover on organizational effectiveness which has prompted so much turnover research in the first place" (Hutchinson et al., 1997: 3203).

We have found only three recent studies that report on the effects of turnover. In all these cases, the topic is treated more or less as a side issue. The three studies yield evidence that suggests a negative effect of employee turnover on organizational performance, but the effects are small (Huselid, 1995), not significant (Koys, 2001) or "preliminary" (Baron, Hannan, & Burton, 2001), resulting from the fact that the research design was not developed with this specific issue in mind. Therefore, important control variables such as absenteeism could

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not be considered. Furthermore, it remains uncertain whether the effects of turnover were linear or only manifest beyond a certain level.

One must therefore conclude that there seems to be no tradition of empirical research into the effects of employee turnover. The reason for this omission is probably twofold: first, companies are often unwilling to provide the necessary data, and second, when data are available, they do not enable researchers to control for spurious relationships. In the next section, we will explain that, as an unfortunate consequence of all this, a sound theoretical model concerning the effects of employee turnover has remained untested. As a result, it has gone largely unnoticed in subsequent turnover research. In this study, we tested that theoretical model. As this model deviates from the assumptions common in turnover research, this test should also make a substantial contribution to the existing knowledge on turnover effects.

THEORETICAL BACKGROUND AND HYPOTHESES

Much research on the causes of turnover has been inspired by the thought that turnover is costly to firms and should therefore be prevented if possible. This assumption was popular in the consultants' literature of the 1990s (e.g., Herman, 1997; White, 1995). In the theoretical literature, a more balanced view on turnover has been upheld, according to which turnover may actually yield benefits (e.g., Staw, 1980). This view has led to the well-known proposal that firms and researchers distinguish "functional" from "dysfunctional" turnover (Dalton, Krackhardt, & Porter, 1981). In the aggregate, these ideas suggest that a firm's turnover level can be too high or too low.

This insight was expressed 20 years ago by Abelson and Baysinger (1984), in their "optimal turnover" model, which can still be regarded as the standard theoretical model for inferring the consequences of turnover. Yet their model is not often applied, and it has left few traces in the empirical literature on turnover. The question, of course, is why this model has had so little impact.

The starting point for Abelson and Baysinger (1984) is the fact that many companies and researchers admit that turnover is not always dysfunctional. They do, however, dismiss as inadequate the most common solution of distinguishing between valuable and expendable employees (implying that turnover should only be prevented for the former), as companies do not even retain valuable employees at all costs. Apart from higher wages and fringe benefits, a number of other expenditures are inherent in tempting an employee to stay (pleasant working conditions, high job autonomy, flexible working hours, and so forth). Therefore, a firm has to find a balance between the costs of turnover and the costs of avoiding it. As these turnover and retention costs are opposing forces, simple economic reasoning tells us that the relationship between employee turnover and the firm economic performance has to be an inverted U-shaped curve. Figure 2 of the article by Abelson and Baysinger (1984) is a graph of this relationship. Performance is placed on the Y-axis, and the rate of turnover, on the X-axis. On the left side of the figure, the curve is upward sloping (representing a positive relation between turnover and performance), and on the right, the curve is downward sloping (representing a negative relation).

This theory implies that, for every company, there is an optimal turnover rate, which can be defined as "the rate that minimizes the sum of the costs of turnover plus the costs associated with reducing it" (Abelson & Baysinger, 1984: 333). At the same time, however, the theory implies that the optimal turnover rate is not the same for all organizations. "The optimal turnover rate for different organizations is likely to vary according to differences in circumstances that influence the balance point between retention and turnover costs. Because this is peculiar to individual organizations, *there probably is no general benchmark for the optimal, nonzero rate of turnover*" (Abelson & Baysinger, 1984: 335, emphasis added).

How then can an organization find out where its optimal turnover rate lies or—what is perhaps more relevant to everyday practice—on which side of the curve the organization finds itself? At this point, Abelson and Baysinger's article follows a course that, we believe, may explain the lack of impact it has had. Instead of offering the promised guidelines for "on-site evaluation of whether or not observed turnover rates are optimal" (Abelson & Baysinger, 1984: 332), the authors ask their readers to perform an analysis that would discourage any human resource manager.

The basis of this approach is a conceptual model that shows how individual, organizational, and environmental factors all influence the "individually perceived costs and benefits of quitting or staying." These costs in turn lead to an "individual quit propensity" that, together with the number of employees, produces the "baseline aggregate organizational turnover rate." Somehow, the human resource managers of an organization have to acquire a notion of this baseline rate and then estimate the turnover and retention costs that would support a policy aimed at the reduction of this baseline. This

implies that human resource managers have to familiarize themselves with the *determinants* of turnover before they can estimate its effects.

Learning these determinants would require no less than a massive research program. Even the "not exhaustive" list of possibly relevant factors that Abelson and Baysinger present (for instance, economic conditions, skill levels, types of rewards desired, staffing strategies, housing prices, local public services, medical facilities, and so forth) is very long. "All of these attributes may influence (1) quit propensities and turnover rates and/or (2) the costs of turnover and retention for any given level of turnover.... Thus, it is important for future research to examine which of these numerous variables influence aggregate optimal organizational turnover rates and the extent of this influence" (Abelson & Baysinger, 1984: 339). Only a mammoth alliance of managers and researchers could accomplish such a task.

Even for academic researchers, it would be difficult if not impossible to identify a level of optimal turnover with the help of this method. Gigantic quantities of data would be needed to put all the necessary control variables in place. It is with good reason that Abelson and Baysinger proposed limiting these endless variations by performing the necessary analyses for a series of similar companies under similar conditions. For example, all hospitals in a particular region could provide the objects of study. For this population, the relationship between employee characteristics, organizational factors, and other independent variables on the one hand and turnover rates on the other would have to be established. This process would yield regression weights that could subsequently be combined with the specific characteristics of a specific organization. An estimate of the baseline aggregate turnover rate of that organization could then be obtained. We propose calling this procedure *multivariate benchmarking.*

Even with this less elaborate version, it might prove impossible to find enough organizations in sufficiently comparable circumstances to extract an externally validated turnover criterion. Furthermore, the empirically derived coefficients might soon be outdated, as the relevant relationships change over time. As Baysinger and Abelson themselves admitted, local and cyclical economic fluctuations strongly influence the propensity of employees to quit. Finally, it is likely that interactions between variables would make a linear transformation of a regression coefficient to a specific organization impossible. In short, we have to conclude that Abelson and Baysinger (1984) have set researchers and practitioners an impossible task by linking the application of their model to data that have to be obtained outside a given company itself.

It is our belief that this is the main reason why this elegant and plausible model has not swept the field. The authors rightly stated that once the notion of an optimal rate of turnover is widely accepted, *"research into turnover should capture this possibility in its premises"* (Abelson & Baysinger, 1984: 332, emphasis added). However, as our literature review has already revealed, the reverse seems to be true. "Although recognizing that each firm may have an optimal rate of turnover [Abelson & Baysinger, 1984], in this study I assumed that low rates of turnover are preferred to high rates," Huselid (1995: 65) wrote—thus formulating what might be called the "conventional assumption of turnover research."

The objective of our study was twofold. Firstly, we sought to demonstrate that Abelson and Baysinger's theory on the effects of turnover is essentially correct. Our central hypothesis is therefore:

> *Hypothesis 1. The overall relationship between employee turnover and firm performance has an inverted U-shape.*

Secondly, we intend to demonstrate that the analysis concerned can be performed with *intra*organizational data—that is, company records. Assuming these two goals are met, this article should provide a practical guideline for managers who wish to find out for themselves on which side of the optimal turnover curve their firm lies.

METHODS

It is not easy to empirically test Abelson and Baysinger's curve. To do that, one would need data from different firms or departments with different turnover rates (or, alternatively, data from one firm or department taken at different times). However, in these situations the relationship between turnover and performance is usually burdened with so many other differences between the organizations that the underlying curve easily becomes obscured. Normally, it is impossible to control for all these differences statistically. Besides, when control variables exceed a certain number, there is a risk of arbitrariness in the models. By some good fortune, we obtained a data set that was almost ideally suited for our purpose.

Data

Our data originate from a temporary job agency that has offices spread throughout The Nether-

lands. The company functions in a highly competitive and dynamic segment of the private service sector. Temping is a major business in The Netherlands; the total number of temp jobs equaled 3.5 percent of Dutch employment in 1996. The vast increase of flexible labor, in combination with a general, rapid growth of employment, has been described as the "Dutch miracle" of the labor market.

Although the profits of the firm we studied largely depended on the turnover in other organizations, the firm itself benefited by having a loyal and experienced staff. The subject of our study was this *staff,* comprising intermediaries, supervisors, office managers, and support staff. In the period to which our data refer, 1995–98, the agency's staff grew from 667 to 1,894 employees. (In the same period, the agency's average volume of daily working temp employees increased from 18,500 to 39,000.) Our units of observation were those offices active during the *whole* period 1995–98; we omitted from the analysis about 100 offices that began activity in this period and 2 offices that ceased activity. We also omitted the data of one office with a turnover percentage of zero, as we considered it lent an artificial bias: the office was primarily active in an area dominated by seasonal employment, and employees from other offices were temporarily relocated there. A total of 110 offices were included in the analysis.

The offices studied varied highly in staff turnover but were similar in product and operational management. In fact, the firm consisted of nearly identical units that provided an identical product. Consequently, we kept constant a number of factors potentially affecting turnover effects, including skill composition, firm-specific human capital, and learning curves. Because of the strong similarities between the offices, a unique opportunity to test the effects of employee turnover on office performance presented itself. If the Abelson and Baysinger curve does exist, it should manifest itself here.

The agency's management was convinced that the firm was on the right-hand side of the curve. Turnover was indeed an issue. After being at an average of 16 percent throughout 1995–97, it had risen to 18 percent in 1998. In that year, a quarter of all offices had turnover of more than 25 percent, and some had more than 40 percent. In the company's 1999 Plan of Operations, top management complained that "a turnover rate too high jeopardizes the quality of service and costs a lot of money." Its target for 1999 was a decrease in turnover of one-third.

We used several data sources, but all were official firm statistical records. Data on the financial performance of the offices were taken from the central accounts of the firm's headquarters. Data on the number of employees, absenteeism, and turnover came from the company's automated personnel files. Of course, our use of firm records did not completely guarantee the reliability of the data, but the principle that unreliability is generally random and therefore suppresses existing relationships applied here. There was no basis for believing that a systematic bias in the data could artificially produce the relationship we meant to test.

Measures

Turnover. We measured the turnover rate of an office in a conventional way, using the formula *number of leavers during year/average number of workers during same year.* Although other formulas are conceivable (cf. Mobley, 1982), this one "is in widespread use and offers advantages of clarity and simplicity of calculations" (Wild & Dawson, 1972: 3). In this measure "worker" is defined as a person and not as a full-time equivalent (FTE). To obtain the average number of office staff employed per office per year, we measured on three dates, January 1, July 1, and December 31, and divided the sum total by three. District managers, supporting staff at the district level, and all personnel not engaged in operational functions were excluded from the analyses and from the turnover figures.

Performance. Since the bulk of the potential costs and benefits of turnover are indirect (Sailors & Sylvestre, 1994), it is advisable to take the *total* economic performance of an office as a measure of the effects of turnover (Staw, 1980). However, this dependent variable of our study is more difficult to grasp than the independent one. Temp agencies usually measure their performance in three different ways. The first is the *number of temp hours* "sold" by an office. The second is the *annual sales* made by an office: the total number of temp hours multiplied by the price per hour. As with the first measure, one can calculate sales per full-time equivalent and use the result to compare one office with another. However, this procedure does not give insight into profitability: even if an office produces below the break-even point, sales may be impressive. The third measure, the *gross result* of an office, provides the desired insight into profitability because it equals sales (second measure) minus the direct wage costs of the temp workers involved. However, it does not include other important costs, such as office staff wages and overhead. This is unfortunate, as the wage costs of the office staff are directly related to the level of turnover.

In order to solve these problems, we developed a

fourth measure, the *net result per office*. This measure was made by taking the gross result per office and subtracting the wage costs of the office staff. For a complete picture of an office's contribution to the firm's profit, overhead costs made for office space and publicity might also be subtracted from the results. We did not do this, as the office staff could not influence the greater part of these costs and, consequently, these costs had no clear relationship to performance in an office. However, one could well argue that turnover-related costs such as those for recruitment and selection would now be obscured by the label "overheads." Given the structure of the data available, these costs could not be specified separately. Consequently, because the results of the offices with a relatively high level of recruitment and selection activities would be estimated as too positive, any potential bias resulting from this procedure would flatten out the right-hand side of the inverted U-shaped curve, thus weakening the hypothesized relationship (that is, the bias is conservative). Therefore, although our measure was not perfect, it suited our purpose, especially as it embraced all the "hidden costs" of turnover that may be regarded as being crucial to the research (Sailors & Sylvestre, 1994).

The correlations between these four measures and the turnover rates of the offices show the relevance of the choice for a particular performance measure. These correlations are −.45, −.42, −.39, and −.23, respectively. It is notably the net result (−.23) that differs. Its relation to turnover is considerably weaker than is the case for the other three performance measures. This observation is in line with the arguments presented above. More than in the other measures, in the net result the positive effects of turnover, such as economizing on costs, are expressed. Consequently, if the management of our temp agency were to estimate the effects of turnover using the three traditional measures, the estimate of its disadvantages would be too high.

Performance or change in performance. Another choice to be made concerned the question of whether the effect of turnover manifests itself in *level* of performance or in *change* in performance. The measures described above all relate to the average results for an office over a given time period. Differences in performance caused by factors in the past and not caught by control variables might continue to affect the dependent variable and thus the relationships at stake. For this reason, some researchers consider a *change* in performance to be the preferred criterion. Thus, Baron and coauthors (2001: 1003–1007) analyzed the rise in sales of Silicon Valley firms by taking the sales of the first year of the period of research as a predictor for the sales in the last year of the period. This is an adequate way of modeling change in performance. All the variance in the dependent variable that already existed in the first year is captured by the first-year variable, so the remaining variance must be the result of ensuing achievements. An additional advantage of this procedure is that it automatically corrects for differences between the offices that show up in past performance.

We did not have a preference for one particular dependent variable. Rather, it was our view that the hypothesized effect of turnover, if robust, would appear in both. In order to test this robustness, we analyzed the data in both ways. Table 2 presents the results of analyses in which the average *level* of net result per office was the dependent variable; Table 3 presents results in which we estimated the *change* in results using Baron et al.'s (2001) method. In the latter case, to avoid contamination, we used the average result per office over the last three years of the period as the dependent variable.

Causality. This important issue was the subject of a preliminary analysis. An obvious objection to the relationship presented by us is that it is not turnover that causes performance, but performance that causes turnover. This problem of causal interpretation is endemic to cross-sectional analysis and can only be solved by presenting longitudinal data. Following Koys's (2001) approach, we used the fact that we had data covering several years and conducted two "mirrored" analyses, one in which turnover preceded performance and one in which it followed performance. Like Koys, we employed cross-lagged regression analysis. We split the total four-year period into two parts of two years each. If the reversed-causality theory held, 1997–98 turnover should have been more strongly related to 1995–96 performance than the other way around. The outcomes clearly show that this was not the case. Regression tables cannot be presented because of space limitations, but the results can be summarized by the correlations. When turnover rates preceded the four performance measures in time, the correlations were −.34, −.35, −.34, −.15, respectively. When this sequence was reversed, the correlations dropped to −.02, −.03, −.01, −.03. We therefore concluded that the performance of the offices could indeed be seen as being *influenced by* turnover and not as the *cause of* turnover.

Time lag. It may take some time before a firm's performance reflects the effects of turnover. However, as there is no compelling theoretical argument with respect to the term within which these effects should manifest themselves (almost immediately, after a year, or after two years?), there is no a priori reason for preferring an analysis with time lag over

an analysis without time lag. Therefore, we performed both. If the curvilinear effect were robust, it would show in both analyses. In the tables, the panel labeled "A" gives the cross-sectional results (over the whole four-year period), and "B" gives the lagged results based on the division into two periods mentioned above.

Control Variables

If, as we believe, the Abelson and Baysinger curve is fundamental, its appearance should not be dependent on extremely complex models with a range of control variables. Few theoretically conceivable control variables are to be found in daily practice, and requiring them would have greatly reduced the practical value of our approach. We wanted our analysis to be as straightforward as possible, but three control variables remained inevitable.

Absenteeism. Turnover and absenteeism owing to sickness may be related if they are caused by a common factor, such as high work pressure or bad human relations, thereby obscuring the fact that any negative effects are caused entirely by absenteeism and not by turnover (cf. Morrow et al., 1999). Therefore, it is difficult but crucial to control for absenteeism in an analysis of the effects of turnover. The personnel files provided a percentage based on the total number of calendar days lost to sickness per year (corrected for part-time contracts; pregnancy and maternity leaves were excluded).

Age. Younger people are more inclined to leave jobs than older employees, and wages and salaries (and thus employee costs) are generally age-related. Controlling for the average age of the office staff was therefore necessary for avoiding artificial effects.

Region. As they do elsewhere, economic structures and performance vary in different parts of The Netherlands. These economic differences affected the results of the offices studied, especially as the temp business is strongly dependent on the nature and volume of economic activity in its region. Also, the level of turnover will be linked to the state of a regional labor market. The Netherlands is commonly seen as having an economic center (the Randstad), a middle region, and an economic periphery. In terms of this conventional regional classification, 43 percent of the offices we studied were located in the economic center, 39 percent were in the middle area, and 18 percent were in the periphery. As expected, the data showed that the average results of the offices varied according to the economic strength of their respective regions (net results in the periphery were only 72 percent of the average), and turnover was higher in the tight labor market of the Randstad (18.5 percent as opposed to 16.2 percent on average). Therefore, a regional classification was included as a control variable in the analysis.

RESULTS

Table 1 shows the descriptive statistics of the variables that were included in the analysis. In the table, one can observe negative correlations between our performance measures and the turnover rates. This is a first and preliminary indication that the firm's top management assumptions were correct. As one can see, no high correlations between the independent variables exist (they only occur between periodic variables that are entered in separate models), so multicollinearity is not a problem. Neither did we find other major violations of the

TABLE 1
Correlations, Means, and Standard Deviations[a]

Variable	Mean	s.d.	1	2	3	4	5	6	7	8	9
1. Turnover	16.2	5.7									
2. Turnover, 1995–1996	14.2	10.9	.64								
3. Absenteeism	3.9	2.1	.29	.22							
4. Absenteeism, 1995–96	3.8	3.3	.16	.14	.81						
5. Age	28.4	2.3	−.18	−.22	−.07	−.02					
6. Region[b]	2.2	0.7	.27	.08	.21	.19	.05				
7. Net result[c]	77.5	37.5	−.23	−.21	−.20	−.12	.03	.19			
8. Net result, 1995[c]	112.2	75.6	−.19	−.12	−.16	−.08	.03	−.06	.79		
9. Net result, 1996–98[c]	66.0	33.9	−.21	−.22	−.17	−.12	.02	.32	.89	.42	
10. Net result, 1997–98[c]	54.3	32.6	−.18	−.15	−.14	−.11	−.02	.35	.72	.20	.91

[a] The period is 1995–98 unless otherwise is specified.
[b] Periphery = 1, middle region = 2, and center = 3.
[c] One thousand Dutch guilders per FTE in 1995 prices.

TABLE 2
Results of Regression Analysis of the Effect of Employee Turnover on the Performance of the Offices[a]

	A. Net Result, 1995–98				B. Net Result, 1997–98			
Variable	**Model 1**	**Model 2**	**Model 3**	**Model 4**	**Model 1**	**Model 2**	**Model 3**	**Model 4**
Turnover[b]	−.23*	−.20†	−.27**	.17	−.15	−.15	−.17†	.22
Absenteeism[c]		−.15	−.19*	−.19†		−.09	−.16†	−.16†
Age		−.01	−.05	−.05		−.05	−.08	−.07
Region			.30**	.31**			.40**	.40**
Turnover squared[b]				−.45				−.44*
F	6.3*	2.8*	4.8**	4.1**	2.4	1.2	6.0**	5.9**
Adjusted R^2	.05	.05	.12	.13	.01	.00	.15	.18

[a] n = 110. Standardized coefficients are shown. Ordinary least squares regression analysis was used.
[b] Turnover 1995–96 for panel B.
[c] Absenteeism 1995–96 for panel B.
$^{\dagger}p < .10$
$^{*}p < .05$
$^{**}p < .01$

assumptions needed to conduct multiple regression analysis.

We analyzed four models. The results are presented in Tables 2 and 3. In model 1, the net results of the offices are regressed against turnover only (and of course against the net result in the first year, when the change in performance is at stake). In model 2 we added the control variables for absenteeism and for the age of the office staff, and in model 3 we introduced economic region. This procedure allowed us to map the hypothesized relationship. The negative correlation between turnover and net result held if we controlled for age and absenteeism, and even increased if we also considered the regional factor. In model 3, turnover, absenteeism, and region all had significant, and expected, effects on office performance. Either the *level* of performance (Table 2) or the *change* in performance (Table 3) can be used as the criterion. The unstandardized regression coefficient (not shown) of turnover in Table 2 indicates that a 1 percent increase in turnover equals a loss of 1,780 Dutch guilders, which is approximately 2.25 percent of one FTE employee's contribution to the net result. From a management point of view, this is quite substantial. Therefore, the volume of turnover did have negative effects for the firm studied.

In model 4, we added curvilinearity to the anal-

TABLE 3
Results of Regression Analysis of the Effect of Employee Turnover on the Change in Performance of the Offices[a]

	A. Net Result, 1996–98				B. Net Result, 1997–98			
Variable	**Model 1**	**Model 2**	**Model 3**	**Model 4**	**Model 1**	**Model 2**	**Model 3**	**Model 4**
Net result, 1995	.39**	.38**	.38**	.38**	.18†	.18†	.19*	.20*
Turnover[b]	−.13	−.12	−.22*	.32	−.13	−.13	−.15†	.25
Absenteeism[c]		−.08	−.14†	−.14		−.08	−.15†	−.15†
Age		−.01	−.06	−.07		−.05	−.08	−.07
Region			.43**	.44**			.41**	.41**
Turnover squared[b]				−.56†				−.45*
F	12.7**	6.4**	11.8**	10.5**	3.1*	1.8	5.9**	6.0**
Adjusted R^2	.18	.17	.33	.34	.04	.03	.19	.22

[a] n = 110. Standardized coefficients are shown. Ordinary least squares regression analysis was used.
[b] Turnover, 1995–96, for panel B.
[c] Absenteeism, 1995–96, for panel B.
$^{\dagger}p < .10$
$^{*}p < .05$
$^{**}p < .01$

ysis, following the Abelson and Baysinger hypothesis. This was done in the conventional way, by adding the squared term of turnover to the regression equation. If the inverted U-curve is underlying, meaning that turnover is beneficial up to a certain level and harmful after that point, then the squared term should reflect this pattern by taking the negative sign while the linear term becomes positive. This is indeed shown in Tables 2 and 3. Although the variance explained remained about the same, the breaking down of the turnover variable suggested that it is predominantly an excessive degree of turnover that had the negative effect on performance. Both the cross-sectional (panel A) and the longitudinal (panel B) analyses revealed this pattern. The curvilinear effect most strongly manifested itself when we allowed for a time lag. This result may indicate that the costs of turnover indeed are "hidden" and become apparent mainly in the long run (Saylors & Sylvestre, 1994).

Do these findings provide enough evidence in favor of our hypothesis? There may be some doubts if one looks at significance. In all cases, after the addition of the squared term, the linear effect becomes positive, clearly pointing toward an inverted U-shaped relationship. The coefficients are not significant, however. Moreover, the negative effect—now captured by the squared term—fails to pass the significance test in one of the four analyses. What does this mean for the hypothesis?

First of all, model 4 may be overstretching our data. Splitting up a significant effect into two partial effects with opposite signs reduces the chance that these partial effects are independently significant. Requiring significance is asking a lot of the statistical power of the test and, of course, when there are only 110 cases, this power is limited. More specifically, the analysis suggests that the optimal turnover level in this firm lies between 6.3 and 9.9 percent. (This range is based on calculation of the first derivative from the unstandardized coefficients in the regressions of Table 2). Only between 5.5 and 14 percent of the offices stayed below this level, which indicates that turnover was generally too high in this firm. Thus, when the data are graphed, the right part of the inverted U is particularly apparent. This may help to explain the lack of significance of the positive effects in model 4. At the times when the offices are more evenly distributed along the curve, negative and positive effects should both be significant.

However, the above is speculation. We acknowledge that, by conventional standards, the results are ambiguous. Curvilinearity is clearly indicated, but the nature of this nonlinearity (inverted U or otherwise) is only suggested by the regression coefficients. We therefore offer the reader two possible interpretations.

Our "strong interpretation" is that the changing sign of the main effect indicates an inverted U-curve. Statistical insignificance only reflects the lack of statistical power that follows from the fact that there are a mere 110 cases, with only a minority of these situated at the left of the top of the curve.

On the other hand, our cautious interpretation is that the insignificance of the positive effects indicates that they do not really deviate from zero. The pattern of linear and squared terms thus only reflects a kink in the curve. First, the effects of higher turnover are neutral (a sort of plateau), and then after a critical point a higher turnover rate becomes unprofitable.

As we believe in the arguments put forward by Abelson and Baysinger, we tend to accept the first interpretation. Academic conventions regarding the interpretation of statistical insignificance may, however, call for the second, cautious, interpretation. It is important to note, though, that *both* interpretations are at odds with the conventional assumption that higher turnover should be unprofitable all along the line.

DISCUSSION

The authors of human resource management (HRM) textbooks will find our main results encouraging. In that literature, turnover is often used as a performance indicator (e.g., Gómez-Mejía, Balkin, & Cardy, 1995), implying that "it is generally viewed as negatively related to organizational effectiveness" (Phillips, 1996: 180). Consequently, Phillips included this indicator in his six-item Human Resources Effectiveness Index, stating that "an excessive turnover rate clearly has a tremendous negative impact on an organization's costs, and HR programs designed to reduce turnover can result in a tremendous bottom-line improvement" (Phillips, 1996: 180). As usual, this author offers no hard empirical evidence, although some bivariate correlations are presented in support of the index. The author later acknowledges that the cost of turnover is "an illusionary figure in most organizations" (Phillips, 1996: 286), forcing analysts to rely on soft data. As we observed before, this state of affairs is explained by the fact that little is known, or indeed *could* be known, about the empirical effects of employee turnover, because relevant data sources are not accessible.

Our analysis shows that turnover *can* have negative effects on firm performance. Here we emphasize the word "can," since economic performance

depends on many factors that vary according to type of firm and related circumstances. This dependence on many factors is also reflected in the weak relation between the variables in our analysis: even in the most elaborate model of Table 2, the variance explained does not rise above 18.5 percent. It is clear that, although employee turnover does explain part of the variation in the performance of the temporary agency offices studied here, other variables affect their performance to a much greater degree.

This last conclusion is of course also implied in Abelson and Baysinger's model. If turnover effects are inverted-U-shaped, they will not, *on average*, be very large. We argued above that, although Abelson and Baysinger laid down the fundamentals of a theory of turnover effects, their work has gone largely unnoticed in turnover research. We believe this lack of notice can be attributed to a misdirected operational foundation. We hope that, with our research, based on a different empirical approach and testing, this model will be granted the place in management theory that it deserves.

Of course we acknowledge that, although curvilinearity is clearly indicated, our results have not yielded compelling evidence for the existence of the inverted U-shaped curve. We believe the absence of compelling evidence can be attributed to the limitations of our study. The most important limitation is the restricted time period. The data pertain to the years 1995 through 1998, when The Netherlands was economically booming. As a result, most offices of our focal agency had to contend with extraordinarily high turnover rates, and only a few offices found themselves placed in the range where a higher turnover would have led to better results. The chances of testing the inverted U-curve were thus reduced. It would therefore be good to replicate this study in times of economic downturn, when turnover figures are much lower and many companies would welcome some mobility. Yet the apparent curvilinearity already implies that both researchers and textbook writers cannot safely assume that a lower rate of turnover is always preferable to a higher rate.

This finding will complicate future research into turnover. It implies that the conventional assumption is not generally justified. For research that only includes turnover as a control variable, the solution is simple: always add the squared term to the regression equation (just as labor economists make it standard practice to include an age-squared term when estimating wage equations or human capital models). As for the use of turnover as a performance indicator, things are more complicated. The conventional assumption that high turnover is deleterious cannot simply be replaced by a universal optimal turnover level, since this level depends on circumstances. It would therefore be wise to work at least with a motivated threshold value (specific for a firm or industry) that indicates from which point onwards turnover can be considered as a negative indicator.

For everyday practice, HR managers should have an idea what the optimal rate of turnover is for their organization. In addition, however, they should be aware that this optimal rate can be influenced. In the spirit of Abelson and Baysinger, they can imagine a long list of factors that are likely to influence turnover and retention costs. As some of these factors are clearly within the scope of company policy, managers can act to reduce these costs, thereby softening the trade-off between flexibility and commitment. To find out more about this, researchers should give priority to specifying the relationship between turnover and performance with regard to type of HR policy.

More specifically, the question whether some types of HR policy are more vulnerable to turnover than others must be asked. We think the answer should be yes, as traditional "Tayloristic" practices have always been inspired by the aim of immunizing firms against worker mobility. In the present era of "high-commitment HRM," firms may still fall back on forms of standardization that reduce replacement costs; or, alternatively, they may try to devise the least expensive ways to retain their valuable employees. The upshot of all this is that HR policy should not only be directed at the level of turnover, but also at the effects of turnover. Job design, training policies, skills portfolios, and the development of distinctive competencies all relate to these turnover effects. If this conjecture is correct, it will take our topic into the realms of business strategy and strategic human resource management.

The fact that the analysis proved possible with data stemming from just one company is very encouraging. Perhaps the necessary research agenda can now be fully realized. Of course, the cultural and structural characteristics of our temp agency, with its many offices producing the same product under similar conditions, offered an almost ideal starting point for our research. An analysis like ours should also be feasible in less ideal circumstances, provided sufficiently appropriate control variables can be found. Computerized personnel files make these company records increasingly accessible, and their analysis is a practical alternative to costly survey research and multivariate benchmarking.

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