The Relationship between Records-Based and Self-Reported Measures of Absenteeism*

Sang-Wook Kim
(Department of Sociology, Sungkyunkwan University)

Abstract: This study evaluates the extent to which records-based and self-reported measures of absenteeism correspond with each other. A valid and reliable self-reported measure can enhance the generalizability of findings about absenteeism and allow data to be collected more efficiently. The enhanced generalizability is of considerable theoretical importance to the study of absenteeism. The sample consists of full-time employees at a large, midwestern, urban hospital in the United States. Data on absences were collected by both questionnaires and records with the same measure for identical employees during the same period of time. The analysis indicates a moderate correlation (.467), which is a conservative estimate, between the suggested self-reported measure and a records-based measure. An argument is made that the suggested self-reported measure, since it represents an improvement over past research, constitutes progress toward the development of a valid and reliable self-reported measure of absenteeism. The paper concludes with seven recommendations for future research.

Key words: absenteeism, self-reported measure, records-based measure, psychometric property

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I. The Relationship between Records-Based and Self-Reported Measures of Absenteeism

Most studies of absenteeism are based on data collected from organizational records (Price and Mueller, 1986a). While there is some absenteeism research that makes use of self-reported measures based on questionnaires or interviews (Allen, 1981; Brooke and Price, 1989; Dalton and Mesch, 1991; Hedges, 1977; Leigh, 1981, 1985, 1991; Martin and Miller, 1986; Nicholson, Wall, and Lischeron, 1977), this is not the dominant pattern. The study of absenteeism is thus different from most organizational research which bases its results heavily on questionnaire and interview data (Price and Mueller, 1986a).

The strong preference for records-based data has four costs for the study of absenteeism. The first cost is that many organizations are not studied, since a substantial number maintain no central records about absenteeism (Folger and Below, 1985). In a 1973 study, Hedges found that fewer than 200 out of 500 U.S. firms surveyed had absenteeism records. In a later study, Scott and Markham (1982) reported that only half of the 987 U.S. firms they examined maintained detailed attendance records. The lack of central records about absenteeism is not limited to American organizations. In a Canadian study, Robertson and Humphreys (1978) found that only 163 of 958 companies contacted kept such records. It has also been reported in Great Britain that no more than seventy percent of organizations sampled by the Confederation of British Industry maintained records of sickness absence for full-time, manual workers (Deery, 1995). The lack of records across many organizations indicates that the findings about absenteeism are founded on a biased sample of organizations.

Second, even when an organization does maintain central attendance records, data are not always available for all types of employees (Folger and Below, 1985). Records-based data are particularly incomplete for white-collar employees (Atkin and Goodman, 1984; Edwards and Whitston, 1993; Johns and Nicholson,

1982). These employees are often not included in the organizational records-keeping system, since the system tends to be applied mostly to blue-collar employees. This incompleteness of attendance records within organizations introduces another bias into the study of absenteeism.

A third cost of relying heavily on records-based data in the study of absenteeism is the flawed assumption that these data are *inherently* more valid and reliable than data collected from interviews or questionnaires. This is not always the case. Markham and Scott (1983) indicate that organizational record-keeping is not error-proof and is often not precise enough to allow for detailed classification, so absences are likely to be recorded incorrectly. A meta-analysis (Ones, Viswesvaran, and Schmidt, 1993) of research findings on counterproductive behaviors in an organization—absenteeism is considered as an example of counterproductive behavior—suggested that, contrary to general expectations, validity is higher for a self-reported measure than for a records-based measure. In short, because of the strong preference for records-based data among absenteeism researchers, they may inadvertently rely on poor data with substantial measurement error.

Fourth, scarce research resources may be used inefficiently because of the preference for records-based data. It usually takes a substantial investment of the researcher's resources to collect data from records. When records are not maintained on computer tapes, time cards—or some equivalent paper records—must be used. Even when computerized records are available, data typically have to be abstracted and transformed to be useful for scholars, because organizations usually maintain their records in formats designed to meet legal requirements and/or comply with trade union contracts. In either case, the processing of records-based data may consume more research resources than if the information about absenteeism was collected by a valid and reliable self-reported measure.

The first three costs have important theoretical implications for the study of absenteeism. Organizational scholars who study

absenteeism generally intend the causal models they are estimating to apply to all work organizations, and, if their samples are biased, either in terms of organizations selected or employees studied, their models cannot be properly generalized to the intended universe. If the use of records-based data also results in substantial measurement error, then the causal models of absenteeism will be improperly estimated. Either way, through biased samples or inadequate estimation, the first three costs result in poorer theory. The theoretical implications of these costs are thus quite significant.

Taken together, these four costs make a case against relying almost exclusively on records in the study of absenteeism. But is it possible to obtain valid and reliable data by means of self-reports? Respondents who provide self-reports may be inclined to give socially acceptable answers—in this case to underreport how often they were absent—and/or to have difficulty recalling the exact number of days they have missed scheduled work. Scholars working in other areas, however, have been able to collect valid and reliable self-reported data on topics in which they are interested. Examples are the study of crime (Hindelang, Hirschi, and Weis, 1979), juvenile delinquency (Viswesvaran, Ones, and Schmidt, 1992), faculty productivity (McGee and Ford, 1987), and job autonomy (Breaugh and Becker, 1987). The collection of valid and reliable self-reported data on absenteeism thus appears to be a reasonable goal.

This study suggests and evaluates a self-reported measure of absenteeism. The evaluation strategy is to correlate the same measure of absenteeism with data collected from two different sources, self-reports and records, for the same employees during an identical time period. A high correlation for the same measure, based on the two sources, indicates that a single construct of absenteeism is being measured by both. Neither source will be used as the criterion. The records-based measure, for instance, will not be used as the criterion to evaluate the self-reported measure, since records-based measures of absenteeism, as already emphasized, are not inherently superior to self-reported measures. The aim is to obtain a high correlation for a

single measure based on two different sources of absenteeism data. Given past research, such a high correlation provides evidence of progress toward the long-term development of a valid and reliable self-reported measure. With the previously indicated costs which accompany an almost exclusive reliance on records-based measure, progress in this development is an important objective. The measure used in this study will be described in a later section. First, however, a previous study similar to the present one will be summarized and criticized.

II. A PREVIOUS STUDY

Mueller and his colleagues (Mueller, Wakefield, Price, and McCloskey, 1987) attempted to assess the validity of self-reported absenteeism data by comparing records-based and self-reported measures for the same employees for nearly the same period of time. The measure they adopted for the two types of data focused on *single-day absences* between January 1981 and June 1981. They found a correlation of .299 between the two measures and concluded that "there is not much support for the validity of the self-report measure" (p. 21). Mueller and his colleagues had no data about the reliability of their self-reported measure of absenteeism.

The study by Mueller and his colleagues has five weaknesses. First, the time period for the two types of absence measures was not perfectly equivalent. Records-based data were collected for the six-month period of January through June of 1981. Self-reported data, intended to measure the same six-month period, were collected during the four months of June to September. The questionnaires which collected the self-reported data referred to "the past six months" but not to specific months. This means that, except for those employees who answered the questionnaire in July, the reference period for those who answered in June, August, and September was not exactly from January through June. Some error thus might have been introduced

into the analysis by the imperfect match in time periods between the two measures. Second, the time interval they used—six months—is quite long and an accurate recall over this period may be difficult. Better data might have been gathered if the respondents had been asked to recall data for a shorter period of time. Most studies which use self-reports of absenteeism refer to a month (Beehr and Gupta, 1978; Gupta and Beehr, 1977) or less (Allen, 1981; Bonilla, 1989; Hedges, 1973; Leigh, 1983, 1991; Martin and Miller, 1986). An accurate recall for a one-month period might not be too difficult for respondents, since they typically do not miss more than a single day per month. Third, there appears to be a problem with the wording of the question that Mueller and his colleagues used. Employees were asked: "During the past 6 months, how many *different times* have you been absent from the hospital for *a single day* of regularly scheduled work?" (Emphases in original.) The question looks as if it is measuring the incidence of absences ("how many different times") and might have caused responses different from the intent of the question which was to assess the incidence of *single-day absences*.[1] "Incidence" is a more general measure than "incidence of single-day absences." Fourth, the sample (n=119) is not large enough to ensure stable statistics. Finally, the authors assume that records-based data are almost always superior to self-reported data, and explicitly used the former as a criterion to assess the validity of the latter. As indicated in the previous section of the present paper, records-based data are not always superior to self-reported data.

The weaknesses suggest that Mueller and his colleagues (1987) might have found a higher correlation between records-based and self-reported measures of absenteeism if there were a more precise match in time period between the two measures, if the self-reported data

1. The following instructions came after this question: "(Include all times whether or not you were paid. Do not count days scheduled off in advance or canceled by the hospital. Also exclude absences of two or more consecutive days.)" Emphasis in original.

were based on a shorter time interval, if a clearer wording of the question were used, and if a larger sample were obtained. By correcting the weaknesses mentioned above, the present study seeks to suggest and evaluate a better self-reported measure of absenteeism. A better measure would constitute progress toward the development of a valid and reliable self-reported measure of absenteeism.

III. METHODOLOGY

Site

The site of this study is a large (478-bed), midwestern, urban hospital in the U.S. More than 2,000 people are employed by the hospital. The hospital, in short, is a major medical center. A hospital was selected for study because a high level of absenteeism is typical of hospitals (Bureau of National Affairs, 1982; Hedges, 1973). This study was part of a larger project estimating a causal model of absenteeism (Cyphert, 1990).

Sample

The sample consists of full-time employees. Since the amount of time worked by part-time employees is not uniform, limiting the sample to full-time employees insures that all the respondents have the same opportunity to be absent.

From the larger study on which this study was based, it was possible to identify 303 respondents who had both usable questionnaires and records-based data to match the self-reported data obtained by the questionnaires. (The questionnaires will be discussed in the following section.) Since the larger study had a sample of 961 from a universe of 1,404 full-time employees, these 303 cases are not representative of the hospital. However, representativeness is not critical for the research question being examined, because this study only attempts to identify the relationship between the two absence measures—records and self-reports—for the same employees for the

same period of time. No attempt is made to generalize these results to the hospital.

Nine outliers were excluded from the sample of 303. The exclusion was done in order to deal with the problem of high sensitivity of correlation coefficients to outliers (Hammer and Landau, 1981; Hays, 1988; Watson, Driver, and Watson, 1985). Statistical detection of outliers was done by the residual analysis of regression diagnostic statistics (Hoaglin and Welsch, 1978), which indicated that the nine cases had the highest studentized residuals (α =.05; d.f.=301). Outliers in this study were mostly the employees who reported that they had missed four or more single days during the month in which data were collected. This is an extraordinarily high amount of absenteeism—few employees miss this amount of work during an entire year—and such a level would not be tolerated by the management of the hospital. These nine outliers may be employees who did not understand the questions and/or who were not motivated to complete carefully the questionnaires. Every questionnaire study has a small number of such employees. Blalock (1979) also suggests that such extreme scores be excluded from the analysis when it is not empirically feasible to extend the range of variability, or when the researcher's interest is focused primarily on less extreme cases. Exclusion of these nine outliers reduced the final sample to 294.

The sample is composed mostly of highly educated, professional employees: ninety-four percent have completed undergraduate or higher degrees and sixty-five percent are nurses. Sixty-one percent of the individuals in the sample are married and seventy-three percent are in their 20s or 30s. Their average length of service is about seven years. The sample did not include physicians since they are self-employed. Because this sample mostly consists of white-collar employees, it complements the usual focus on blue-collar employees in most research on absenteeism.

Data Collection

Information on employee absences was collected both from records and by questionnaires. Records-based data were obtained directly from hospital payroll records. Self-reported data were obtained by questionnaires which were distributed through the hospital's mailing system. Two weeks after the initial distribution, a reminder notice and second survey were distributed. Surveys were returned to the university sponsoring the research. Each questionnaire had an identification number to allow matching with records. The meaning of the identification number was explained to the respondents, who were also informed that their answers to the questions would be kept confidential.

Definition and Measurement

Absenteeism is defined as the nonattendance of employees for scheduled work (Goodman, Atkin, and Associates, 1984; Price and Mueller, 1986b; Van der Merwe and Miller, 1976). What is critical for the definition is the "for scheduled work," that is, absenteeism occurs when the employee fails to attend work when he/she is supposed to be there. Nonattendance that is scheduled in advance with the employer, such as for vacations, is not considered absenteeism. Absenteeism is usually differentiated into voluntary and involuntary components (Steers and Rhodes, 1978), which are distinguished by the exercise of choice. The research reported in this paper is concerned only with voluntary absenteeism.

The number of single days of scheduled work missed for each employee in a month is the measure used in both records-based and self-reported absenteeism data. Single-day absence was selected as the measure, because this type of assessment is generally believed to tap the voluntary aspect of absenteeism (Chadwick-Jones, Nicholson, and Brown, 1982; Edwards and Whitston, 1993; Hackett and Guion, 1985; Nicholson et al., 1977).

The *self-reported* measure asked the employees to respond to the following questionnaire item:

> How many single days of scheduled work did you miss last month?
>
> (Note: A half-day to an entire day counts as a single day missed; consecutive days missed should not be included in the calculation. Ignore whether or not you were paid for the days missed and do not count days scheduled off in advance, such as vacations and holidays.)
>
> _____
>
> Number of *single* days missed

The *records-based* measure is the total number of single-day absences in the same month, as recorded in the hospital's payroll records.

Analysis

The analysis of data in this paper is straightforward. An overall correlation coefficient is computed between records-based and self-reported measures of absenteeism, thus allowing the correspondence between the two measures to be evaluated.

The appropriateness of standard statistical procedures of correlation and regression for the statistical analysis of skewed, truncated data like absenteeism (Hammer and Landau, 1981; Hulin, 1984; Watson et al., 1985) requires some discussion. Like most other absenteeism data, both records-based and self-reported data in the present study are skewed to the right and truncated by the presence of a substantial number of zero scores (*see* Table 1). However, the use of a correlation coefficient to analyze this kind of data is appropriate for two reasons. First, as previously indicated, the focus is not on making any statistical inference about a certain population, but on evaluating the degree of correspondence between the two measures of absenteeism. No attempt is made in this study either to assume the

normality of distributions or to test the statistical significance of the correlation obtained.[2] Second, the appropriateness of a correlation coefficient for skewed, truncated data should be evaluated not by the form of distribution but rather by whether the two distributions are skewed in the same direction or not (Carroll, 1961). To the extent that the two distributions are skewed in opposite directions, a correlation coefficient is not a satisfactory measure of association, since the association between them is likely to be nonlinear, thereby violating the critical assumption of linearity in correlation analysis.[3] This situation would cast a serious challenge to the use of a correlation coefficient, even for the descriptive purpose like this study. However, as shown in Table 1, the two distributions in the present study are similar in the direction of skewness. In short, it is appropriate to use a correlation coefficient to analyze the data of this study.

IV. RESULTS

The statistics for the records-based and self-reported measures of single-day absences are shown in Table 1. More than half of the employees had no single-day absences in the month, as indicated by both records (77.2%) and self-reports (66.0%). Employees who had one or more absences make up the other 22.8% of records-based data and 34.0% of self-reported data. The mean number of self-reported absences per person (.473) is almost double the mean number of

2. One way to accommodate this problem is to apply the normalizing transformation procedures to the data (Watson et al., 1985). Such procedures were not applied in this study for two reasons. First, it was viewed as inappropriate to do that just for the sake of a statistical significance test of the correlation coefficient. Second, and more important, even the transformation procedures usually fail to achieve normality due to the extreme skewness and truncation (Carroll, 1961; Hammer and Landau, 1981) in absence data.
3. According to Carroll (1961) and Hays (1988), the maximum possible absolute correlation is extremely depressed, mostly below .3, in this situation.

officially-recorded absences per person (.265). The standard deviations differ by .224, although the median and mode are identical. Both distributions are positively skewed because of a relatively large number of zero scores, but the skewing is slightly less for the self-reported measure (1.553) than for the records-based measure (2.017).

Table 1. Frequency Distributions and Summary Statistics for Records-Based and Self-Reported Measures of Absenteeism

Number of Absences	Records-Based	Self-Reported
0	227(77.2)[a]	194(66.0)
1	57(19.4)	68(23.1)
2	9(3.1)	25(8.5)
3	1(.3)	7(2.4)
Total	294(100.0)	294(100.0)
Mean No. of Absences per Person	.265	.473
Median	.000	.000
Mode	.000	.000
Standard Deviation	.527	.751
Skewness	2.017	1.553
Pearson *r*	**.467**	

[a] Figures within parentheses are percentages.

What is most important for assessing the relationship between the two measures, however, is the correlation between them. If these two measures do reflect the same underlying construct, then they should have positive and high correlation. The Pearson correlation coefficient between the two measures is .467. Although it has the expected positive sign, the magnitude of the association is moderate.

V. DISCUSSION

The moderate association (.467) between the records-based and self-reported measures of absenteeism is not high enough to argue that measures from these two sources are assessing the same underlying construct. Nonetheless, it is a significant improvement over the association (.299) found by Mueller and his colleagues and constitutes progress toward the long-term goal of developing a valid and reliable self-reported measure of absenteeism.

The obtained correlation is a conservative estimate for three reasons. First, since the number of single-day absences as a measure of voluntary absenteeism has not been thoroughly evaluated by empirical studies, the measure probably has some measurement error which will attenuate the correlation obtained. The correction of obtained correlation for attenuation due to unreliability in measurement was not possible in this study, because a measure of reliability was not available. Second, the obtained correlation is conservative because the value of the correlation coefficient tends to be constricted when applied to a skewed, truncated distribution (Carroll, 1961; Hammer and Landau, 1981). The third reason for the correlation being conservative is that the measurement of both records-based and self-reported absences was based on a relatively short time period of one month. Based on Atkin and Goodman (1984), it could be argued that a correlation of .467 for a short time period would be as good as one of, say, .70, for a longer time period, because the longer time period makes it possible to more closely approximate the typical distribution of absence data, thereby allowing its theoretical maximum correlation to approach the unity (1.00). In this sense, it may be argued that the correlation obtained in this study is a significant improvement over that of Mueller and his colleagues (1987) which was obtained from a six month period. Taken together, these three points strongly support the argument that the obtained correlation of .467 is conservative, and that the real association between the two measures of absenteeism is

stronger considering the measurement error, shape of the distribution, and the time interval on which the measurement is based.

This study is able to report a higher association than the one obtained by Mueller and his colleagues (from .299 to .467) because of the previously described methodological improvements. By continuing to improve the methodology, additional studies like this one may someday obtain a closer correspondence between absence data collected by self-reports and from official records. If the correspondence can be significantly increased, to .700 for example, researchers will be more justified in using the improved self-reported measure and their findings will be more generalizable and data collection will be more efficient. These are considerable benefits worth working for, especially the theoretical significance of enhanced generalizability. The present study should be viewed as part of a long-term attempt to develop a valid and reliable self-reported measure of absenteeism.

It is not clear why the mean number of self-reported absences per person (.473) is almost double the mean number of officially-recorded absences per person (.265). Two speculations are feasible. Scarce resources are required to record carefully the number of absences, and these resources can more profitably be used—from the perspective of an official record-keeper—for activities more closely related to the direct production of organizational output. Self-reports are not subject to these resource constraints. Or again, employees who are powerful and prestigious may be able to avoid official reporting of their absenteeism due to their position in the organization. The motivation to avoid this reporting exists, because absenteeism is commonly viewed as deviant behavior from the perspective of the organization. Self-reports are not subject to this constraint of power and prestige. (This argument could not be empirically checked in this research, since the sample is too homogeneous, consisting mostly of white-collar professionals.) If these speculations are confirmed, and if this difference between self-reports and records is consistently found in future research, then the difference raises serious questions about the

validity of records-based measures of absenteeism which are the foundation of most theorizing about missing scheduled work.

VI. SUMMARY AND CONCLUSION

Summary

This study has suggested and evaluated a self-reported measure of absenteeism. The evaluation was conducted by correlating a self-reported measure with a records-based measure among full-time employees of a large, midwestern, urban hospital. The two measures of single-day absences were compared for the same employees for the same period of time, and the extent of correspondence between them was evaluated. A positive and moderate correlation (.467), which is a conservative estimate, between the two measures of official records and self-reports was found. The conclusion was that the suggested self-reported measure of absenteeism constitutes progress toward the long-term goal of developing a valid and reliable self-reported measure of absenteeism.

Development of a valid and reliable self-reported measure would make it possible to study absenteeism in the many organizations which do not have centralized records. The wider use of self-reported measures would also make it possible to study the white-collar employees whose absenteeism often goes unrecorded. These two benefits of a wider use of self-reported measures should result in better theory about absenteeism, since the sample of organizations and employees sampled more closely match the intended universe of absenteeism researchers. Greater use of self-reported measures would also result in a more efficient data collection, since considerable resources are expended to collect absenteeism data from records. It is thus important to move forward toward the development of a valid and reliable self-reported measure of absenteeism.

Conclusion

Seven suggestions for further research are offered. First, the sample must be larger to ensure stable statistics. Even though the sample (n=294) is more than double that used by Mueller and his colleagues (n=119), it is still not large enough to ensure statistical stability. Second, the sample should consist of both white-collar and blue-collar employees. Since blue-collar employees generally have higher rates of absenteeism than white-collar employees (Edwards and Whitston, 1993), such a sample would increase the variance of absenteeism. A larger variance would improve both explanation and measurement. Third, the period of data collection might be shortened. In the present study, the questionnaires were returned for two months. The longer this time period, the greater the likelihood of error. Fourth, the wording of the questionnaire item may be further improved. The investigators have spent a sizable amount of time on the wording, but it can undoubtedly be improved. For instance, the question refers to "vacations and holidays." It may be better to refer to "vacations," since the distinction between vacations and holidays is not clear. Fifth, the time interval for the measurement of single-day absences may be modified. Rather than simply asking respondents to report the number of single-day absences during the last specific month, it might be useful to ask them to count absences during specific events, such as a pay cycle. This may aid their recall by prompting them to think about their past behaviors in the context of some salient event. It may even be feasible to lengthen the time interval. The investigators assume that a month or less is the best interval for the measurement of self-reported absences, but this issue needs to be settled empirically. It may be that a two-month period will ultimately be the most desirable, since it will provide more variance than a one-month period. Sixth, the reliability of the suggested self-reported measure should be assessed. It might be possible, for example, to collect self-reported data three times during a three-month period and calculate coefficients to assess the consistency among the three measures. Finally, an attempt should be made to assess the validity of the self-reported measure. This can be

done, for example, by correlating the self-reported measure with widely accepted determinants and/or consequences of absenteeism.

Implementation of these seven suggestions should result in a more valid and reliable self-reported measure of absenteeism. Such a measure will enhance the generalizability of the findings on absenteeism and ensure more efficient collection of absence data. The enhanced generalizability has a substantial theoretical importance, because, as already indicated, organizational scholars who study absenteeism intend that the causal models they estimate apply to all employees in all organizations rather than to a narrow subsample of employees in a narrow subsample of organizations. Organizational scholars are usually exhorted to make greater use of records (Price and Mueller, 1986a); however, in the study of absenteeism, it may be more productive to make greater use of self-reports.

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