



## **Time for Absenteeism: A 20-Year Review of Origins, Offshoots, and Outcomes**

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*We use a time-based system to help organize, summarize, and analyze research on employee absenteeism published in the last 20 years (1977-1996). Although what is known about some mid-term (4-12 month) origins of absence-taking has been greatly clarified and expanded, less is known about long-term (> 12 months) and short-term (1 day - 3 months) origins, or about how causes in different time frames relate to each other. Poor performance and "neglectful" behaviors serve as reliable offshoots of absenteeism. The long- and short-term etiology of the latter behaviors is unclear, but their shared variance in the mid-term reflects negative job attitudes. Outcomes of absenteeism have received much less research attention. Although mid-term consequences such as reduced performance, turnover, and organizational expense are well-established, little is known about short- and long-term effects of absence-taking on individuals and their social environments. We conclude with suggestions for more explicit consideration of time frames, causal lags, and aggregation periods in the next decades of absenteeism research.*

Twenty years have passed since a comprehensive narrative review of the employee absenteeism literature appeared in a management-related journal (Muchinsky, 1977). Much has happened in the interim. Over a dozen books have been written about it (e.g., Goodman & Atkin, 1984; Rhodes & Steers, 1990), and at least ten different theories have been elucidated (e.g., Brooke, 1986). A number of meta-analyses have summarized bivariate relationships of absenteeism with other variables, including four on its relationship with job satisfaction alone (e.g., Hackett & Guion, 1985). Several critiques and reorientations of the literature have been posed (e.g., Hulin, 1991; Johns & Nicholson, 1982).

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Clearly, employee absenteeism has been a vigorous area of scholarship. From 1977 to 1996 an average of 25.6 academic journal articles dealing with absenteeism have appeared each year. The 20-year trend is strongly positive:  $r = .78$  between year and number of articles. All told, over 500 behavioral science papers, books, and chapters that include absenteeism as a major variable have been published during the period (space constraints limit us from citing every noteworthy article; therefore, we highlight those that are typical of particular findings or approaches). Sometimes this work has yielded a consensus about specific findings. Other times it has prompted new developments and debates.

The purpose of this article is to review those findings, developments and debates. It differs from other narrative summaries in several ways. First, we steer away from most of the thorny definitional, methodological and statistical problems that imbue absenteeism research. Other papers cover them thoroughly (e.g., Johns, 1994a). Second, we attempt to address all major streams of work on absenteeism, bringing in theories and evidence from labor economics, sociology, behavioral medicine, rehabilitation, and ergonomics. Paradigms in these areas are often quite different from those in management, and their viewpoints can prompt new insights. Third, and most importantly, we try to clarify findings in terms of *time*. We initially organize studies by their focus on absenteeism's origins (causes), offshoots (simultaneous covariates), and outcomes (consequences), and then further differentiate each of these by the time frames the variables are presumed to operate in: as short-, mid-, and long-term processes or sources of variance. Fourth, as we review absenteeism research over the last twenty years, we raise questions and offer detailed suggestions for the next twenty, pointing out where and how we think the most useful knowledge might be gained.

### **Organizing Framework: Time for Absenteeism**

One notable development in absence research has been a growing awareness of the importance and (mis)treatment of time (Martocchio & Harrison, 1993). We reinforce that development here. Clarifying the nature or ordering of relationships, *in time*, should prompt researchers to work through their conceptual schemes and methodological choices more deeply. It should also increase the yield of future studies. Therefore, in this initial section of our review we lay out a time-based system for organizing theoretical propositions and evidence about absenteeism.

#### *Time and Causal Flow*

Causes must precede effects. Unfortunately, this axiom is frequently violated in work on absenteeism. This is especially troubling because absence research is in a unique position to help settle weighty questions about affect-behavior versus behavior-affect mechanisms in organizations. Steel and Rentsch (1995) review 55 empirical articles in which the stated purpose was to predict or explain absenteeism. Yet, slightly more than half used a postdictive design. In our own canvassing of papers, we found roughly the same proportion overall, which was especially high in the survey-based, epidemiological or health-related studies reviewed

below. Many times, the description of data collection was not clear enough for us to make a judgment (in our ensuing review, we try to cite those studies in which timing and causal flow in the research design are clearly designed and appropriate for the question at hand).

Because theory-based, randomized experiments about absence-taking are rare (e.g., Frayne & Latham, 1987), this state of affairs raises serious questions about the true sequence of absenteeism's origins and outcomes. For example, job satisfaction is the affective variable most often connected with absenteeism, in an approach that treats absences as *responses* to aversive work environments. However, in studies designed to evaluate the reverse ordering, both postdictive and predictive correlations are roughly the same size (e.g., Blau, 1985; Zaccaro, Craig & Quinn, 1991). At least one study has shown stronger paths from absenteeism to satisfaction (Tharenou, 1993). Given the large number of studies in which both types of constructs are measured (Hackett, 1989), it is frustrating that conceptual and descriptive ambiguity about time has prevented more definitive answers to this version of the chicken-egg question.

Although we risk belaboring the obvious, future work aimed at understanding the origins of absence must measure those purported causes *before* absenteeism accrues, using a lag period that is relevant to those causes. The opposite is true if the primary concern is with absenteeism's outcomes. If reciprocal effects or loops through time are of interest, cross-sectional designs are simply not very useful, regardless of the sophistication of data-analytic techniques. Furthermore, absence researchers should clearly describe their rationale for the timing of their measurements of other variables, and the length of absence aggregation periods. Both of these issues are intertwined with assumptions about causal lags, in a way that is different and more subtle in this domain of research than others. To illustrate, suppose that someone wants to test the hypothesis that perceived (in)justice positively contributes to absenteeism. Perceived (in)justice would likely be measured as a snapshot, on a specific day. On the other hand, because of its low base rate, absenteeism will almost always be aggregated over some subsequent (or less appropriately, some previous) time period, as a cumulative total. The chosen aggregation period automatically determines the outer bound of the causal lag; it marks the time that a researcher assumes it will take for injustice to generate its effect.

As Hulin (1991) has pointed out, however, scholars need a time-based framework to help make meaningful aggregation choices. We propose the elements of such a framework in the next section. It is built from findings in absence research, but it should be general enough to be used in any area in which aggregation or dynamism are concerns (e.g., performance; Hulin, Henry & Noon, 1990).

### *Time-Based Components of Variance in Absenteeism*

An absence is constitutively *defined* in a very small time period, usually a single work day. Echoing this definition, some theorists have proposed that absences occur whenever a person chooses to allocate time to activities that compete with scheduled work, either to satisfy the waxing and waning of underly-

ing motivational rhythms (Fichman, 1984) or to maximize personal utility (Chelius, 1981). There *is* systematic variation in absenteeism over very short time periods (Harrison & Hulin, 1989), but absence data are seldom available at such a fine-grained level. When fine-grained data are available, their low base-rate distributions usually suffer from severe discreteness, skew, and kurtosis (Hammer & Landau, 1981). Therefore, researchers often rely on absences aggregated over convenient or arbitrarily longer times—typically one year (Mitra, Jenkins & Gupta, 1992).

To compound the problem, sets of independent variables in absence research carry a mix of dynamism. They range from demographic features such as sex that are constant over a lifetime (Price, 1995), to constructs such as attendance attitudes that fluctuate daily (Hackett, Bycio & Guion, 1989). Absences clearly do arise from a mix of causes; no one has discovered a magic absenteeism bullet (Johns, 1997). However, *different causes are more or less detectable given the time frame over which absenteeism is cumulated* (Epstein, 1983). The same is true for absenteeism's consequences. The levels of individual absenteeism cumulated over any time period are most likely to reflect variables that are defined in and relatively stable over that period. We outline this idea more formally below.

**Long-term sources of variance.** As with other variables in management research, it is reasonable (if only as a heuristic device) to depict variance components in absenteeism as an additive, linear model. In doing so, we borrow ideas from factor analysis, but our covariance structure is based on time rather than response content. We begin at the top of the temporal hierarchy, with long-term (*L*) variance. From typical aggregation periods in studies of other individual-level criteria (e.g., performance: Hulin et al., 1990; turnover: Williams & Livingstone, 1994), we define long-term as having a time span of more than one year. As with all definitions, a one-year dividing line (between long- and "mid-term" periods in the present paper) is somewhat arbitrary. However, the one-year interval or aggregation period for absenteeism does have a degree of ecological validity. In addition to yearly rhythms being strong external "pacers" of behavior patterns (McGrath & Kelly, 1986), many organizations use a fiscal or calendar year as their absence accounting period—determining when sanctions kick in and how strong they will be. Individuals clearly use such annual periods to regulate their absence-taking (e.g., Fichman, 1988; Harrison & Hulin, 1989). Aggregation over a year moves absenteeism data beyond the individual, social, and organizational changes defined within an annual cycle (e.g., "this was the year that...I got promoted,...our department moved to a new office,...our firm downsized") and into the realm of individual behavioral persistence across such changes.

Variables likely to correlate with a distribution of absences aggregated over a long-term period are themselves stable in the long term. The major reason for this arises from the statistical algebra of total scores. When a researcher adds several "items," or in this case, time periods together, the resulting composite will be dominated by the portion of variation that is shared amongst those time periods. With *k* periods, total score variance will contain *k* (*k* - 1) covariance terms and only *k* variance terms. As *k* goes up, the total score is quickly overwhelmed by

*whatever is a common, stable component* in all of the  $k$  terms—whatever serves as the source of baseline covariation.

Unfortunately, only a few long-term studies of absence have appeared in the last 20 years (e.g., Thomas & Thomas, 1994). They tend to emphasize demographic characteristics such as gender and education. We argue that these variables would share more variance with a five-year, rather than a six-month, total of absenteeism. This is precisely what Steel and Rentsch (1995) reported when they examined correlations over progressively longer aggregation periods. In future work, we look forward to more long-term predictions by cognitive abilities, biodata, chronic mental and physical disorders, work values, dispositional sources of affect, and personality dimensions. Indeed, in the personality literature, debates have raged for decades about comparable forms of aggregation (Rushton, Brainerd & Pressley, 1983). An upshot of those debates is that when the time frames of absenteeism and other variables are *compatible*, empirical relationships between them will be at their strongest (Ajzen, 1991; Epstein, 1983).

**Mid-term sources of variance.** Mid-term ( $M$ ) variance in absenteeism can be thought of as having a time span of between three months and one year. This period includes quarters and single years, which we noted above were common intervals for absenteeism records and attendance patterning (see also Dalton & Mesch, 1991). The lower bound of this interval is perhaps the most arbitrary. An alternative might be a period between one month and one year, given the clarity, “naturalness” (Johns, 1994a), and potency of months in regulating individual and organizational processes (e.g., pay periods; McGrath & Kelly, 1986). However, adopting a one-month lower bound would severely limit both the base rate of absenteeism (Harrison & Hulin, 1989) and the number of short-term studies we could review.

Especially at the shorter end of the interval, the notion of a mid-term level of time also corresponds to periods over which global job attitudes remain fairly stable (Rosse & Hulin, 1985). Thus, for mid-term periods, job attitudes will be at their peak relevance for and peak correlation with absenteeism. Support for this idea also comes from Hackett’s (1989) meta-analysis, and annualized data reported by Steel and Rentsch (1995). Beyond the first year after it was measured, job satisfaction’s correlation with absenteeism dropped steadily. Similar patterns might be expected for absence cultures (Nicholson & Johns, 1985), organizational commitment (Cohen, 1991), task characteristics (Fried & Ferris, 1987), and other constructs that are likely to show meaningful year-to-year, but not day-to-day or week-to-week changes. Longitudinal studies would be especially welcome if they tracked relationships with these constructs over several intervening years, or measured the constructs repeatedly in panel designs that spanned the same period.

Adjacent mid-term totals correlate well with each other. In fact, research in the last twenty years has shown that by far the best predictor of this year’s absenteeism is last year’s, with correlations ranging from .5 to .7 (see Farrell & Stamm’s 1988 meta-analysis, and Steel, 1990). These correlations are due, in part, to the long-term variance components discussed above. They also reflect “carry-over” or “straddling” of absence-generating processes from one time period to the next. Both a long-term and an adjacency component of mid-term variance would

generate a quasi-simplex matrix of correlations between absenteeism totals in successive mid-term time periods, which can be thought of as a symmetric "wave" of correlations cresting on the diagonal. Correlations would be highest between adjacent times (e.g., 1995 and 1996), and would decrease steadily over longer intervening times. They would not "bottom out" at zero, even over many years, because of the long-term source of variance.

Note that if mid-term totals were added together, a construct that changed substantially from one mid-term period to the next would not add much variance to the long-term total. Much of its contribution would be regulated to what is referred to in psychometrics as "item-specific" error or unique variance. Instead, summing mid-term totals would increase the relative contribution of long-term sources of variance. More generally, *aggregating over some overall time period builds up the proportion of variance in effects defined in the overall time period, and reduces proportions of variance defined in constituent intervals.*<sup>1</sup>

**Short-term sources of variance.** Short-term (*S*) variance in absenteeism can be defined as having a time span of a few days to three months. This covers the range of most decision-based studies, as well as the "attendance spell" approach used in predicting the length of time until someone takes their next absence (e.g., Fichman, 1988). Variance due to attendance decision parameters (Martocchio, 1992), acute work and life stressors (Theorell et al., 1992), or relative dissatisfaction (Rosse & Miller, 1984), would be highlighted in a short-term aggregation period. Parallel to the formulation described above, absenteeism variance in any short-term period can be thought of as having a common, mid-term component, as well as a carryover component from the previous, adjacent short-term period.<sup>2</sup> Also, summing short-term indices of absenteeism would tend to build up the proportion of variance due to mid-term sources, the next level up in the temporal hierarchy.

A useful way to view this entire set of ideas is as a *cascade* of time-based effects. Long-term influences flow into mid-term ones. In turn, mid-term influences pour into short-term ones. The temporal nature of these effects is also represented by the terms *distal*, *medial*, and *proximal*, which we take up below. A deductive implication of this sequence is that the path of long-term variables to current absenteeism is indirect: captured and mediated by both mid-term and short-term variables (e.g., Harrison & Bell, 1995).

Although the last point might seem to trivialize the contribution of individual differences to absenteeism, we do not intend that as an explicit or implicit consequence of the time framework. Instead, the framework shows how and when researchers will have the best opportunity to detect the impact of individual differences. We hope it spurs more long-term research. It is also possible, indeed *likely*, that long-term variables define subsamples of people for whom short-term absenteeism parameters might differ. The notion that a wide variety of moderators might operate in the absence-taking process was one of the main emphases of Johns and Nicholson's critique (1982), and it has been supported in recent studies (Hackett et al., 1989; Martocchio & Judge, 1994; Zaccaro et al., 1991). Both the ideas of a strong potential for moderators, and the long- to short-term mediation of effects, are also implicit in many of the absenteeism theories and hypotheses we

review next. In the "Origins" section and later "Offshoots" and "Outcomes" sections of the review, we move from causes to covariates to consequences of absenteeism. Within each of these broad temporal classifications, we examine long-, mid-, and short-term patterns of relationships.

### Origins of Absenteeism

#### *Theories and Guiding Hypotheses*

Most absenteeism research in the last 20 years, particularly conceptual work, has focused on absenteeism's origins or causes. The vast number of predictions these theories and hypotheses make, the breadth of approaches they take, and the scope of evidence they have generated all make one thing clear: absenteeism does not have a simple etiology (Johns, 1997). Our own reading of the literature suggests five loosely defined classes of variables hypothesized to be origins of absence. We review them using the time frame over which they are presumed to unfold. We start with hypotheses about long-term or *distal* origins: (a) personality and (b) demographic characteristics. We then move to mid-term or *medial* origins: (c) job-related attitudes and (d) social context. We finish with short-term or *proximal* origins: (e) decision-making mechanisms. Most theories of absenteeism contain a mix of these types. Many share a time-ordered structure.

**Personality.** The most striking feature of the dispositional approach to absenteeism is its omission from any fully articulated theory. Rather, the conceptual treatment of personality indicates a long-standing "proposition in use" (Johns & Nicholson, 1982). Researchers have suggested for decades that enduring personality traits account for absenteeism's moderate stability over time and situations. "Absence-proneness" emerged as the term describing this idea (cf., Harrison & Price, 1993); Johns (1997) has labeled this perspective the "deviance" approach. For example, Porter and Steers (1973) proposed that employees with extreme levels of emotional instability, anxiety, low achievement orientation, aggression, independence, and sociability were likely to be the most frequent absentees. Hogan and Hogan (1989) assert that those who are at fairly high levels of hostility, impulsiveness, social insensitivity, and alienation are more prone to engage in delinquent work behaviors such as absenteeism. Ferris, Bergin and Wayne (1989) presented a more differentiated view, proposing that personality dimensions also moderated situational and attitudinal relationships with absenteeism, a notion that begins to mesh distal variables with medial ones.

**Demographics.** Most of the what is known about relationships between demographic variables and absenteeism stems from the sheer bulk of years of data. Dozens of studies have accumulated in which gender, age, tenure, education level, and family characteristics were measured, both because it was very easy to do so (with high reliability and validity), and because there was a growing recognition that some of these characteristics consistently predicted absence-taking (Garrison & Muchinsky, 1977). As evidence piled up, demographic variables were brought into broadly inclusive and inductive absenteeism models.

The most influential and often-cited example of such a model was developed by Steers and Rhodes (1978, 1984). Strictly speaking, it is perhaps best consid-

ered a framework rather than a theory *per se*, because it specifies broad collections of variables rather than relations between well-defined constructs (Brooke, 1986). The Steers and Rhodes model introduced a series of propositions implying that an individual's demographic characteristics (personal factors, family characteristics) indirectly influence absenteeism through sets of medial variables (such as expectations and job satisfaction) and proximal constructs (attendance motivation and ability to attend). These proximal constructs are also predicted to interact—the effects of attendance motivation are tempered or neutralized by low ability to attend. Just as in the cascade model above, an underlying premise of Steers and Rhodes' model is that an employee's short-term motivation and ability to attend work are the direct precursors of attendance. Despite researchers' recognition of the importance of this model, it has had surprisingly few overall tests. Instead, as Rhodes and Steers (1990) point out, most articles claiming to be guided by its propositions only test one or two portions of it. In the only full-blown examination of the theory, Lee (1989) was unable to support the main or interactive effects of ability to attend on absenteeism, but did find that the short-term concept of attendance motivation had a direct (but weak) impact, which also mediated the effects of other mid- and long-term variables such as demographics.

Subsequent to the Steers and Rhodes (1978, 1984) models, Brooke (1986) proposed a revised and extended model. He predicted additional, direct inputs of health-related (e.g., alcohol use) and organizational constructs (e.g., permissiveness) to absenteeism, stated more precise definitions of existing constructs, and argued for additive rather multiplicative effects. More importantly, he steered away from demographic characteristics and other long-term variables in the original Steers and Rhodes model, and he removed the short-term and most proximal constructs: attendance motivation and ability to attend, because of documented conceptual and methodological problems. The resulting model is therefore the only absenteeism theory couched within a single time frame. Virtually all of the dependent and independent variables are defined in the mid-term, shown by the form of subsequent operationalizations and empirical tests which supported a number of the proposed paths in the model (Brook & Price, 1989).

Marcus and Smith (1985) presented a sociological model of absenteeism that included demographic characteristics. Their basic contention, similar to other views described below, was that previous research had concentrated too heavily on attitudinal determinants of absenteeism, and that a more fruitful approach would concentrate on absence norms, customs, and socialization. In their model, demographic variables, especially occupation and industry, are markers for powerful social processes. This demographics-as-proxies approach is common in sociology, and is consistent with the idea that such variables have indirect or distal effects (Price, 1995).

**Attitudes.** The chief conceptual paradigm for absenteeism, at least at the start of the 20-year review period, was to treat absence-taking as individual-level avoidance or withdrawal from a disliked work situation. As with research on personality substrates of absenteeism, this paradigm did not originally have a fully articulated theory to draw from (Johns & Nicholson, 1982). Steers and Rhodes, however, assigned job attitudes a central place in their 1978 model, predicting that



the effects of all other job-related and organizational variables on absence would work their way through job satisfaction. In their 1984 reformulation, they reduced its role, placing it alongside other inputs such as organizational control systems and group norms. In both cases, they proposed that the effect of this medial or mid-term source of absenteeism variance was indirect, captured and transmitted by short-term attendance motivation.

In contrast, (negative) job attitudes are the *only* mid-term engine driving absenteeism in Rosse and Miller's (1984) cybernetic theory of job adaptation, and in Hulin, Roznowski and Hachiya's (1985) withdrawal theory, although both models propose behavioral responses to dissatisfaction other than absence (see the *Offshoots* section below). Another notable feature of the two models is that they include "evaluation of alternatives" or "behavioral intentions" as penultimate steps to absence. Both constructs are similar to attendance motivation in scope and short-term time frame. They form part of the decision-making approach discussed later.

Other job attitude theorists relegate a much weaker role to job satisfaction. Blau and Boal (1987) skip it entirely, instead emphasizing two other forms of job-related attitudes as catalysts: organizational commitment and job involvement. Their arguments focus on the patterns of absenteeism and turnover likely to be manifest under interactive combinations of those two attitudes. As with Rosse and Miller (1984) and Hulin et al. (1985) their conceptual scheme is more a model of responses to particular attitudes than a fully specified theory of absenteeism. On the other hand, Brooke's (1986) theory of absenteeism does profess to be fully specified. He includes all three attitudes in his theory, but downplays job satisfaction, assigning it indirect effects through organizational commitment and job involvement. Unlike Blau and Boal (1987), Brooke predicts the latter two variables to have additive, rather than multiplicative, effects.

**Social context.** Johns and Nicholson (1982) argued for a potent influence of the social environment on work absence, rejecting the traditional, implicit assumption that absence was a private behavior that occurred without regard to interpersonal context. The influence of social context on absence is embodied in their conception of an *absence culture*, defined as "the set of shared understandings about absence legitimacy and the established 'custom and practice' of employee absence behavior and its control" (p. 136). Nicholson and Johns (1985) maintained that two factors shape absence cultures, which we categorize as long-term and mid-term sources of absenteeism variance, respectively: (a) the values and beliefs of the larger society and its subcultures, and (b) the unique set of beliefs shared by virtue of membership in an organization. Two themes, beliefs about absence and assumptions about employment (psychological contract), describe the long-term character of societal-level absence culture. For example, virtually all cultures view serious illness as an acceptable reason for missing work (Rushmore & Youngblood, 1979), and this position has held for decades (Haccoun & Desgent, 1993). At the organizational level, the salience and nature of absence cultures can vary over different units (Martocchio, 1994) and over shorter, mid-term time periods. The salience of norms and beliefs about absence

legitimacy can change with new supervisors, coworkers, job demands, and control systems (Miners, Moore, Champoux & Martocchio, 1995).

**Decision-Making.** Firmly anchored in the short-term, theories about absence or attendance decisions contain the most proximal influences on discrete absence events. Both economic (e.g., Chelius, 1981) and psychological (e.g., Harrison, 1995) researchers have depicted absence as the result of a daily choice process. In the economic approach, employees are assumed to make work attendance decisions in a way that strives toward utility maximization, making themselves as happy as possible given finite resources of time and money (Ehrenberg & Smith, 1985). A variety of marginal utility and cost functions have been proposed within this general axiom. For example, Winkler (1980) conceptualized absence in terms of work-leisure trade-offs, through which individuals maximize utility subject to a budget constraint. A common prediction of the economic models is that individuals would take as many fully paid absence days in a given period as allowed or not penalized by their employer.

Although expected utility (anticipated affect) is part of the decision-making process in psychological theories (Fichman, 1984), it is just one of many issues thought to be considered by those facing the choice of absence or attendance at work (Harrison, 1995; Nicholson, 1977). Rather than drawing from decision-making constructs, however, Fichman's (1984) theory drew on a general theory of motivation, arguing that to explain the timing of absence and attendance, one must consider the dynamic strengths of motives to engage in work versus non-work activities. Unfulfilled motives strengthen over time. This changing motive strength leads to switches between attendance and absence. If there were no external constraints on time allocation, and persons could act on their motives without cost, then one could construct a deterministic model of the timing and duration of absence and attendance. However, "exogenous shocks" or random events such as work stoppages, accidents, and illness impose external constraints on time allocation.

Nicholson (1977) proposed that absence events were based on the extent to which an individual's choice or decision preceded it. Labeling this the A (unavoidable, no choice)—B (avoidable, choice) continuum of absence-inducing events, he argued that the relationship between such events and the likelihood of absence is influenced by attendance motivation or "work attachment." In turn, this short-term construct is proposed to be a function of other mid-term and long-term variables such as work involvement and facets of the employment relationship. Both of these propositions predate similar relationships put forward by Steers and Rhodes (1978; i.e., interactive combination of short-term motivation and ability to attend, traced to other mid- and long-term determinants).

In another short-term model, Martocchio and Harrison (1993) borrowed decision-making elements from the social psychological theories of reasoned action (Ajzen & Fishbein, 1980) and planned behavior (Ajzen, 1991). They proposed that when employees are prompted to think about attending work, they consider subjective expected utility or attitude towards attending: "how much would I *like* to attend work (what are the likely consequences for me)?"; subjective norm about attendance: "how much do other people *expect* me to attend

work?"; and perceived control over attendance: "how strongly do I feel that I *can* attend work?" These fluctuating cognitions combine additively to shape attendance intention, which then determines actual attendance. In the context of volunteer work, Harrison (1995) expanded this theory to include a choice function among intentions for alternative settings, a feeling of moral obligation as an input to attendance intentions ("how clear is it that attending work is the *right thing to do*?"), and a feedback loop connecting attendance to the effects of future attitude, subjective norm, perceived control, and moral obligation.

**Summary and integration.** Before turning to empirical work on the origins of absenteeism, we move backward through the time-based variance in the model just described, connecting it to other theories and guiding hypotheses along the way. A person's absence or attendance at work on a specific day can be thought of as a result of stemming from short-term motivation, or a choice from at least two competing alternatives (Fichman, 1984; Winkler, 1980). Each component of that decision or intention can be linked to mid-term and long-term sources of variance. Attitude toward attendance at work could be traced to (affective) organizational commitment (Blau & Boal, 1987), job involvement (Brooke, 1986) or relative job satisfaction (Rosse & Miller, 1984). Subjective norms about attendance might reflect a work group's or organization's absence culture (Nicholson & Johns, 1985). Perceived control, which is quite similar to Nicholson's (1977) A—B event continuum, could be the short-term outgrowth of Steers and Rhodes' (1984) perceived ability to attend. Moral obligation might arise from broad societal or occupational beliefs about the legitimacy of a potential absence (Marcus & Smith, 1985). Relative weights for each decision parameter might differ across personality types (Hogan & Hogan, 1989) and demographic groups (Ferris, Bergin & Wayne, 1988).

## Empirical Evidence

### *Long-Term Sources of Variance or Distal Origins*

Our review of evidence about the origins or causes of absenteeism is also broadly organized by time: as distal, medial, or proximal sources of variation. At first glance, these categorizations seem simple. Indeed, short-term or proximal origins (often discrete events) are fairly clear cut. However, the classification of other sources of absenteeism variance was far more difficult, particularly when distinguishing long-term from mid-term predictors (are job characteristics stable for more than a year, and therefore distal?; or are they likely to change significantly within that time, and be classified as medial?). In any case, we urge more research that examines the stability of various job features, policies, attitudes, and perceptions, such as Staw, Bell and Clausen (1986), so as to better understand the temporal sequence of factors leading to absence. We begin with potential *long-term* sources of absenteeism variance.

**Personality.** Evidence for the role of personality in absence-taking is relatively limited. A few studies have established relationships between specific personality traits and absenteeism for periods spanning six months to one year, but little beyond that. Bernardin (1977) predicted that "a tendency emerges for

employees who withdraw from organizations to manifest personality characteristics at extreme positions along certain trait continua" (p. 17). He found support for only one of 16 measured personality variables. Anxiety was correlated with a six-month absence total among sales professionals. Subsequently, Ferris, Youngblood, and Yates (1985) replicated this finding for the absenteeism of flight attendants over the course of a year. In a study of school teachers, Ferris, Bergin and Wayne (1988) demonstrated significant sex  $\times$  personality interactions. They found that the ability to control anxiety was unrelated to absence among male teachers, but inversely related for female teachers. Also, they demonstrated that independence was unrelated to male teachers' absence, but positively related to female teachers' absence. Further research provided evidence for moderated personality-absence relationships. Mowday and Spencer (1981) showed another interactive effect: need for autonomy  $\times$  job scope.

These studies provide some support for predicting absence from a limited set of personality traits. Future research could further advance our understanding of the links between personality dimensions and absence with thoughtful a priori hypotheses substantiated with stronger theoretical rationales. Using a subset of the "big five" personality dimensions appears to have the greatest potential. Conscientiousness, extroversion, and neuroticism (which is a somewhat broader trait than anxiety) are good possibilities. Some recent steps have been taken down this path. Hogan and Hogan (1989) treated absence as a manifestation of antisocial behavior. Specifically, they argued that absence from work represents a component of employee reliability, which they cast as a personality variable. Lastly, as we argued earlier, we would expect personality to be predictive of absence over time spans greater than a year. Future research should take advantage of longer aggregation periods.

**Demographics.** Although they are generally not the focus of investigations, many researchers report zero-order correlations between various demographic characteristics and absence. Age and sex appear to be the most widely studied demographic origins of absence, paralleling the growing gender and age diversity in the work force. In fact, extensive meta-analyses have reviewed the relationships between age (Hackett, 1990; Martocchio, 1989), sex (Farrell & Stamm, 1988) and absence from work.

Martocchio (1989) found a moderately strong negative relationship between age and absence frequency for men:  $\rho = -.27$ , but not for women:  $\rho = -.03$ . In addition, he found that the age-absence relationship was weaker in physically demanding jobs. Hackett's (1990) meta-analytic review contributed additional insights to these correlations, showing that age  $\rightarrow$  absenteeism relationships dropped substantially (for the most common used measures of absenteeism: frequency and time lost) when he controlled for tenure. These results support Martocchio's (1989) interactional psychology contention, that older workers would exhibit lower absence because of a better person-organization fit that emerges over time. Long-term panel studies of this hypothesis would more firmly test such hypotheses about age, tenure, and absenteeism. They would also help to separate cohort from longitudinal effects, which are confounded in the meta-analyzed studies. If cross-sectional data on age and tenure continue to be collected, routine checks of

their moderating effects would be useful (e.g., in addition to the age  $\times$  gender interaction, job satisfaction may have a larger impact on absenteeism for younger employees).

Farrell and Stamm's (1988) meta-analytic review revealed that women tend to be absent more frequently, but for shorter durations than men. Corrected effect sizes were small ( $\rho = .11$ ), but most of the aggregation periods in the original studies were not long enough to be fully compatible with the long-term variance in gender. Steel and Rentsch (1995) report uncorrected correlations of  $r \geq .35$  for absence and gender in four- and five-year totals. At this point, explanations for gender differences in absenteeism rates are still speculative. However, the findings are consistent with females reporting that they do more instrumental, family-oriented behaviors when they miss work (Haccoun & Desgent, 1993). They also fit with research indicating that kinship responsibilities are positively related to absence (Blegen, Mueller & Price, 1988), given prevailing differences in the socialization of men and women regarding family care (Goff, Mount & Jamison, 1990). A simple way to verify this notion would be to routinely test for gender  $\times$  family responsibility interactions in future absence research. Women are also more susceptible than men to family-work conflict and to its deleterious health outcomes (Frone, Russell & Cooper, 1992). In addition, females experience greater levels of work stress (Higgins, 1986) and higher rates of several physical and mental illnesses (Selzer, Paluszny & Carroll, 1978). A productive direction for further study of gender differences will be to examine differences in causal structure (i.e., gender as a ubiquitous moderator). Recent studies have found several unique correlates of absence-taking in female versus male subsamples (e.g., VandenHeuvel & Wooden, 1995).

**Chronic health conditions and habits.** Management research on absenteeism has tended to emphasize predictable (e.g., demographic variables) and controllable (e.g., incentives, social norms) sources of variance—in “avoidable” absenteeism. It may not be surprising, then, that a source of data missing from past reviews is the vast amount of evidence linking absences to health conditions, which are presumably less predictable and controllable—constituting “unavoidable” absenteeism. The avoidable versus unavoidable distinction, however, is blurry at best (Smulders, 1980), and concentration on a single form of absence prevents a full understanding of the phenomenon (Brooke, 1986). Therefore, we briefly summarize empirical trends regarding health-related variables and absenteeism from vocational rehabilitation, counseling psychology, behavioral medicine, and similar domains. Before turning to those trends though, it is important to note some common features of the clinical perspective.

The clinical investigations generally can be contrasted with those in management in that the former approach tends to treat *sickness absence* as an indicator of the importance of the health-related variable under study, to be “...used as an integrated measure of physical, psychological, and social functioning in studies of working populations” (Marmot et al., 1995; p. 124). Absence is, thus, not the focus of those studies. It is merely a convenient, bottom-line consequence. In the management approach, absence *is* the focus of study, treated as an important variable in its own right.

The dominant research design in the clinical paradigm involves hundreds or thousands of respondents answering hours of interview and survey questions about their health states and behavioral histories. Many times they are given physiological tests. Sophisticated sampling is done from various demographic groups, occupations, industries, and regions. This breadth of respondents assures strong external validity, easily surpassing most management research in that regard (Martocchio & Harrison, 1993). On the other hand, clinically oriented studies typically collect retrospective, self-reported absence data (e.g., Tucker, Aldana, & Friedman, 1990). When data are prospective, they are measured via respondent recollections from a second wave of interviews or surveys (e.g., Harvey et al., 1992). The self-report questions are usually loaded with attributional content (e.g., "how many days did you miss work in the past year *because of illness?* . . . pre-menstrual pain? . . . headaches?"). Reliability or validity estimates for these measures are rarely reported. Work attitudes or psychological variables other than overall stress are seldom measured. The soundness of the dependent variable is, therefore, often suspect, and effect sizes are likely biased by misspecification. We, thus, offer interpretations of the results of this large body of work with some caution. Obviously, the door is open for research that capitalizes on the best of the clinical and management paradigms (see Hendrix, Steel, Leap & Summers, 1991, for a richer mix of approaches).

Smoking, substance abuse, depression, and lack of exercise are supported by the most evidence as long-term, health-related origins of absenteeism. Smokers tend to miss more work than those who have never smoked, but the effect is larger for men than women (Bush & Wooden, 1995; Leigh, 1995; Parkes, 1987). When directly compared it has a smaller effect than most job-related attitudes (although few long-term studies are reported, which would improve the compatibility of the smoking variable and absenteeism; Hendrix & Taylor, 1987). Smoking might also amplify the influence of other variables on absence (e.g., negative affect: Parkes, 1983). Once again, in subsequent research we recommend routine measurement of smoking habits and automatic checks of interactive influences.

Illicit drug use is reliably connected to absence-taking, generating  $\geq 50\%$  more absenteeism among users (e.g., Bass et al., 1996; Normand, Salyards & Mahoney, 1990). The effect of drinking, however, is more complex. Although there is some relationship with absenteeism (Brooke & Price, 1989), it is not a linear function of the amount of alcohol consumed (Casswell, Gilmore & Ashton, 1988). "Problem drinking," a level that creates some form of other social dysfunction; seems to be the threshold at which work attendance suffers (e.g., Beaumont & Hyman, 1987), especially via absences with long durations (Marmot et al., 1993). Some researchers have raised concerns about the validity of absenteeism's relationships with drinking and smoking (Ault et al., 1991). In particular, these researchers maintain that smokers also tend to use alcohol, creating a confound between these two presumed origins (although we note that most studies statistically adjust for the effects of either habit). Others have observed that smoking, substance abuse, and depression are more prevalent in people holding lower socio-economic status (SES) jobs. SES is a long-term, negative predictor of absence (Marmot et al., 1995).

Some large-scale studies have shown that the severely depressed exhibit more absenteeism than those who are less depressed, when other demographic and health-related variables are controlled (e.g., Kouzis, & Eaton, 1994). Others have found a positive association between minor depression and absence (e.g., Skodol, Schwartz, Dohrenwend, Levav & Shrout, 1994). Women tend to suffer more depression than men, leading to a higher rate of depression-induced absences (Garrison & Eaton, 1992). Presumably, chronic pain should cause individuals to be absent often and for longer durations. Although some research is suggestive of this relationship for migraine headaches, musculoskeletal problems, and severe pre-menstrual symptoms, many researchers are quick to raise concerns about internal validity here as well. For example, Breslau and Davis (1993) urged caution about the migraine-absence relationship because migraines tend to cause depressive illness.

Finally, other large-scale studies show that after adjusting for demographics, social support variables, and other health states, regular exercise or physical activity predicts cardiovascular (CV) fitness, which in turn predicts self- and supervisor-rated work attendance (e.g., Tucker et al., 1990). This sequence seems to be amenable to firm-level interventions, although there may be a positive findings bias in publishing results. Several groups of researchers (e.g., Daley & Parfit, 1996) have presented quasi-experimental data suggesting that taking part in organizational exercise programs leads to better physical well-being and fewer absences. Other workplace health promotion programs, such as education, are also related to improvement in CV fitness and reduced absenteeism (e.g., Bertera, 1993). Both efforts have the greatest impact on those with the highest initial health risks, which is another moderating effect (Shi, 1993).

**Other long-term variables.** Work values are fairly enduring personal characteristics, changing only gradually through adulthood. Despite early work suggesting that such values have implications for absenteeism (Ilgen & Hollenback, 1977; Steers & Rhodes, 1978), this set of variables has literally dropped off the radar screen in absence research. Long-term investigations of absenteeism might be served by a renewed interest in the role of values (including cross-cultural values), alongside conceptual approaches that mingle personality traits with physical attributes (e.g., "disease prone" personalities: Friedmann & Booth-Kewley, 1987). Finally, personnel selection methods might be useful in identifying long-term sources of absenteeism variance, perhaps in a biodata paradigm. For example, Moss (1986) describes a unique twist on this idea, in which he found that the best predictors of school and work absenteeism among undergraduates was the reported absenteeism/attendance of their parents, as well as the reinforcements they received from their parents when they were ill as children.

#### *Mid-Term Sources of Variance: Medial Predictors*

**General job attitudes.** Over the years, a great deal of absence research focused on the presumed influences of general work-related attitudes, including job satisfaction, job involvement, and organizational commitment. In general, researchers predicted that each of these job attitudes would be inversely related to *mid-term* levels of absence. For example, employees high in job involvement

identify with their work and care about the kind of work they do (Blau & Boal, 1987). These employees should be less likely to be absent because absence limits their opportunities to perform their jobs. Employees with high levels of organizational commitment identify with a particular firm; they are less likely to miss work because it jeopardizes their membership in it (Mowday, Porter & Steers, 1982).

Meta-analyses (e.g., Hackett, 1989) support these general expectations. Cumulative effect sizes, corrected for sampling error and measurement reliability in some cases, but not for temporal mismatches, are  $\rho = -.14$  for job satisfaction,  $\rho = -.14$  for job involvement, and  $\rho = -.11$  for organizational commitment. The latter correlation is moderated by tenure, with  $\rho = .08$  in samples of employees with up to 8 years tenure and  $\rho = -.24$  in samples of employees with tenure of 9 years or more. The highest meta-analytic correlation between any facet of job satisfaction and absenteeism is for the work or task itself:  $\rho = -.21$ . Future research on the mid-term origins of absenteeism must take heed of these findings, incorporating some measure of *each* construct in its predictor set to assure properly specified models. Brooke and Price (1989) did just that, finding that only job satisfaction had a direct effect on absence. With several such studies completed, an important next step would be establishing the relative or incremental contributions of these attitudinal variables, as Tett and Meyer (1993) have done for the turnover area. In addition, tests of the interactive influences of involvement and commitment on absenteeism predicted by Blau and Boal (1987) would be helpful and straightforward. Existing evidence is contradictory. Blau (1986) obtained the predicted synergistic effect, but Mathieu and Kohler (1990) reported a dampening effect.

Despite consistently negative relationships, the meta-analyses above also convincingly illustrate that work attitudes are not telling the whole story about absenteeism. For instance, the largest proportion of variance explained in mid-term absenteeism is  $r^2 \leq .05$  for satisfaction with work tasks. Attitude theory (Ajzen & Fishbein, 1980) provides a simple explanation. For a strong empirical relationship to exist between an attitude and a behavior, both must correspond not only in time, but in their levels of specificity. Job satisfaction, organizational commitment, and job involvement are general attitudes. Absence is a specific behavior. Johns (1997) and Ilgen and Hollenback (1977) offer further explanations, noting that constraints (i.e., the sole "bread winner" for a family of five versus a single person with substantial savings in the bank) influence absenteeism and restrict individuals from behaving in line with their attitudes. A novel study by Smith (1977) illustrates this idea. He examined attendance on the same day in two geographically dispersed locations (Chicago vs. New York) of a company, finding that when a snowstorm in Chicago removed expectations of attendance that day because of treacherous travel conditions, work attitudes were related to attendance. There was no significant relationship between work attitudes and attendance for New York on that day, or for both locations on other days. The ideas and data are consistent with the interactive predictions about attendance motivation and ability to attend made in the Steers and Rhodes (1978, 1984) and Nicholson (1977) models.



**Human resource practices.** Various HR practices have been studied now and again as origins of absenteeism, but only work schedules (shiftwork, flex-time) and absence control policies have received a thorough empirical treatment. Two basic premises underlie research on both shifts and the flexibility of work time: (a) certain times of the day and work week generate either greater conflict or synchronization with internal (physiological, motivational) and external (social) rhythms; and, (b) there are strong individual differences in those rhythms. To illustrate, Nicholson, Jackson and Howe (1978) studied different combinations of shift cycles and positions, finding that employees whose rest days fell on Saturday and Sunday (i.e., were "in synch" with others' social rhythms) exhibited less absence than those whose rest times fell on other weekdays. Evidence consistently shows that rotating or evening shifts yield higher absenteeism rates (e.g., Jamal, 1981; Markham, Danserau & Alutto, 1982a), and that working on those shifts is most harmful to the attendance of employees with more non-work responsibilities (e.g., Smulders, 1983). Flexible work hours are also consistently related to lower absenteeism rates (e.g., Dalton & Mesch, 1990; Leigh, 1991), as they allow employees greater control over the coordination of work, home and other obligations.

Work schedules could be regarded as an *indirect* source of absenteeism control. Currently, two types of *direct* strategies for reducing absenteeism have received empirical attention. The first strategy rests on operant principles of reward and punishments (e.g., Scott & Markham, 1982). The second strategy involves absence prevention or the perceived ability to attend, and it is reviewed later in this section. In mid- and long-term time frames, operant-based control policies have a mixed track record. Evidence indicates that absence control systems can neutralize some forms of absence behavior and catalyze others. For example, Schotzhauer and Rosse (1985) demonstrated the efficacy of a positive reinforcement system during two of its three-years of operation. On the other hand, Dalton and Mesch (1991) showed absence control policies could actually encourage absence. In the firm they studied, employees had to accumulate 90 days of unused sick leave before they could have paid sick leave (for 1-2 day absences). The policy suppressed absences only until employees reached the paid threshold, at which time they took sick leave ferociously. A number of studies also show that punishments, or stricter enforcement of penalties for one type of absence, tend to instigate other forms of missing work (e.g., Miners et al., 1995). However, this is not to suggest that control policies should be lenient. Unionized settings, where sick leave policies are typically more generous, are clearly prone to higher absenteeism (Drago & Wooden, 1992; Leigh, 1985, 1986). Such policies also convey a relaxed norm about absenteeism, and studies in the next section demonstrate that those norms can promote absence-taking.

**Social (Normative) influences.** Johns and Nicholson's (1982; Nicholson & Johns, 1985) conceptual work on social influence instigated a new and vibrant stream of empirical work. We review examples from four sets of studies in this stream, based either on the way that social influences were operationalized or on the unit of analysis for absence. One set of studies attempted to capture normative influences indirectly. For example, researchers have inferred social influences on

absence from variation in absence rates across industries and occupations (Meisenheimer, 1990), organizations in different countries (Chadwick-Jones, Nicholson & Brown, 1982), organizations within industries (Parkes, 1983), units of the same companies (Terborg, Lee, Smith, Davis & Turbin, 1982), departments within organizations, and work groups within departments (e.g., Markham & McKee, 1995).

A second group of investigations queried individuals about the numbers of days they or their coworkers were absent. In Harrison and Shaffer's (1994) set of studies, individuals reported, on average, having roughly half the absenteeism of the perceived norm among their peers; 85-95% reported being above average in their attendance. More importantly, they tied at least part of the difference to large overreporting of absenteeism norms. They also showed that perceived norms explained unique variance in subsequent absenteeism. Johns (1994b) reports similar perceptual findings. In addition, he found that managers consistently estimated their own work groups as having lower absence rates than the average group in the firm. Gellatly (1995) took this work a step further by showing that the effect of past coworker absence levels on subsequent absence was mediated by individual perceptions of norms.

A third set of studies employed cross-level designs to examine social influences on individual absences. The conceptualization and measurement of norms varied from study to study. In a field experiment involving Marine units, Majchrzak (1987) trained a random half of unit supervisors to provide clearer and more frequent supervisory communication of the standards of acceptability for absence (based on the formal absence control policy). This cross-level intervention reduced the level of subsequent absence among the soldiers in the treatment condition. Schaubroeck et al. (1993) reported a similar result after training university supervisors in role clarification. Mathieu and Kohler (1990) found that group contextual factors (operationalized as the average level of absenteeism in a transit operator's work unit over the last 6 months) helped to predict later (6-month) individual absenteeism, after accounting for the individual's past absence levels, demographics, and work attitudes. They concluded their study with a call for researchers to measure "absence culture" more directly, using a psychological measure in a cross-level design. Martocchio (1994) followed up on Mathieu and Kohler's suggestion by aggregating individual responses within departments to summative scales of the perceived costs and benefits of being absent, respectively. He reported that group-level beliefs about the positive (i.e., relief) and negative (e.g., loss of pay) outcomes of absence were positively related to absence frequency aggregated over three months.

A fourth set of studies related group-level phenomena to group-level absence rates. Drawing from the socialization and interactional psychology literatures, George (1990) predicted that the positive affective tone of a group would be inversely related to subsequent group absence, and the negative affective tone of a group would be positively associated with subsequent group absence. The latter hypothesis was supported. More recently, Markham and McKee (1995) hypothesized absence culture to have two dimensions: (a) external standards (or employees' perceptions of management's goals) for absence, and (b) internal

standards (or employees' perceptions about the legitimacy of absence). Controlling for individual differences in sex, tenure, and family responsibilities, these researchers found support for the influence of an absence culture on group absence. Specifically, groups with lower external and internal standards for absence had more absence over a year than groups with higher external and internal standards.

**External economic factors.** Some researchers have shown interest in the influence of such macro-economic factors as unemployment rate on absence-taking. Not surprisingly, the focal hypothesis of these studies predicts that increases in unemployment rates will lead to lower absenteeism, as individuals perceive restricted ease of movement to a comparable job (Larson & Fukami, 1985). Also, employees may believe that employers are likely to lay off frequently absent employees when economic conditions are not favorable, because they cannot afford to carry the unproductive (Leigh, 1985). Data support the predicted inverse relationship, at the individual (Larson & Fukami, 1985; Leigh, 1985), plant (Markham & McKee, 1991), industry (Leigh, 1985), and national (Leigh, 1985; Markham, 1985) levels. There are likely to be many links that transmit the impact of macro-economic conditions to absence. Researchers should give consideration to these issues in future research. For example, it is reasonable to expect that perceptions and interpretations of the economy are filtered through an analysis of financial need and fiscal responsibility for family well-being, while absence or attendance decisions are made.

**Job characteristics and work-related stress.** Investigations of perceived and objective work characteristics have demonstrated links to absence. A meta-analysis of three studies of the job characteristics-absenteeism relationship yielded small to modest effect sizes for the relationships between each (and the composite) job characteristic score (Fried & Ferris, 1987). With one exception, the direction of these relationships was consistent with expectations of the job characteristics model. As in most meta-analytic treatments, however, they did not account for the operation of job satisfaction. So, the effects of task variables might be shared with or mediated by job attitudes.

Current theories of work stress also connect task characteristics with absenteeism, predicting that when job requirements are not matched with the appropriate levels of personal resource control or decision latitude, employees experience distress and exhibit mental and physical strains (e.g., Melamed et al., 1995). Stresses and strains could be alleviated by absenteeism (e.g., Dwyer & Ganster, 1991). Despite the simplicity of this approach and other stress hypotheses (most make predictions that are similar to the withdrawal perspective), the data that it and other stress-related hypotheses have generated are fairly murky. The basic weakness in most hypotheses and investigations is in specifying why *absences* are a likely, effective, or typical response to stress. Johns (1997) provides the most thorough treatment of this issue, and we concur with his suggestion that more fully articulated relationships among the nature of stressors (e.g., conflict, overload, physical demands), contextual variables, and coping mechanisms are necessary before it will become clear how stress and absence are connected.

### *Short-Term Sources of Variance: Proximal Origins*

**Acute (mental and physical) stressors.** Colds and flu, family illness, and pain are the top three reasons that employees give for their own absences from work (Louis Harris & Associates, 1996). Each could be thought of as a *short-term* source of absenteeism variance. These conditions are seldom studied in the organizational arena, which led Nicholson and Martocchio (1995) to label maladies such as short-term illness the “black hole” of absenteeism research. There is evidence that effects of short-term illness and other acute stressors can be controlled with interventions. Hendrix (1985) found that cold and flu onset was a function of psychological stress. Altchiler and Motta (1994) showed that some illness-spurring stress can be reduced quickly (in 1-8 weeks) by exercise, although exercise did not necessarily reduce absenteeism. In a double-blind field experiment, Nichol et al. (1995) observed a 43% lower rate of cold- and flu-related sick leave for adults receiving influenza vaccines rather than placebos. The authors estimated organizational savings of 3-5 *times* the cost of flu shots for employees. Clearly, health-related causes of short-term absence are preventable and worth studying.

Smoking cessation is another physically taxing, relatively short-term event. Manning, Osland and Osland (1989) found that those who just stopped smoking had higher absence rates (as well as greater depression, job-related tension, anxiety and poorer eating and health habits) than their smoking and non-smoking coworkers. Sadly, these counter-productive effects seem to dissipate fairly slowly over time (i.e., months to years: Wooden & Bush, 1995).

Other acute stressors are even more profound. Sanchez, Korbin and Viscarra (1995) reported that when corporations provided tangible relief services to hurricane-stricken employees, the employees missed less work in the short term and felt higher organizational commitment in the long-term—which might mitigate future absenteeism. Theorell et al. (1992) compared catecholamine levels and absence records of matched controls to subway drivers whose trains had hit pedestrians. Infusion of catecholamines (e.g., epinephrine and norepinephrine) into the bloodstream is an autonomic reactions to a distinct stressor. In the short term, high levels of catecholamines heighten arousal and prepare the body for “fight or flight”; in the long-term they are unhealthy. Drivers involved in a “person under train” incident experienced higher levels of these hormones, more disturbed sleep, and greater absenteeism, especially in the 3 weeks immediately after the event. Immediate counseling and social support, such as that provided to police officers after a shooting or to teachers after violence at school, might mitigate some of the effect on absence-taking (Cooper & Sadri, 1991). A simple, but surprisingly effective, short-term treatment for these stressors might be to write about them. Francis and Pennebaker (1992) found that subjects randomly assigned to describe a personally traumatic event and their own reaction to it on paper had lower catecholamine levels and fewer absences in the next six weeks (but not beyond).

Other events are less dramatic stressors, but they can prompt employees to think about missing work. Dalton and Mesch (1992) found that those who

requested but did not receive transfers had higher post-decision absenteeism rates than those whose requests were granted. Similarly, those who nominated themselves for a promotion but did not receive it had higher absenteeism rates than their counterparts who were promoted (Schwarzwald, Koslowsky & Shalit, 1992). Klaas, Heneman and Olson (1991) showed that absenteeism went up for two months after union employees filed policy-related grievances, which signaled and challenged a presumed injustice with regard to treatment by management. Both stress- and withdrawal or equity-based explanations would account for these types of input reduction (Geurts, Buunk & Schaufeli, 1994).

***Time and transition(s) from work to absence.*** Some investigators have used temporal patterns to make inferences about short-term absenteeism processes, focusing on *when* an employee will be absent, rather than *if* or *how* much. Using data from coal miners, Fichman (1988, 1989) demonstrated that the daily probability of absence-taking went up as the time since one's last absence increased, but went down as other opportunities for fulfilling non-work motives occurred in the interim (e.g., a paid holiday). Both results are consistent with his model of synchronous but opposing motive rhythms for work and non-work activities. Harrison and Hulin (1989) used similar time-sensitive techniques, and observed that daily absence-taking was uniquely associated with short-term attendance histories and temporal variables (weekday, season/month), but not long-term demographics. These individual-level findings about time coincide with firm-level studies such as Leonard, Dolan, and Arsenault (1990). Future research from this perspective would benefit from careful checking of moderators such as Markham, Dansereau, and Alutto's research (1982a, 1982b) that showed shift  $\times$  time and gender  $\times$  time interactions. Even more critical to this work is socially or psychologically richer data, with more direct measurement of the assumed decision-making or motivational processes.

Some of those richer data can be found in George (1989), who postulated that absence and attendance were forms of (short-term) mood control. Employees in her study who experienced more positive moods on the job were less likely to miss work in a subsequent 3-month period, after controlling for personality traits and demographic variables. Although her propositions fit most closely with Fichman's (1984) theory, the temporal interplay of mood states and absenteeism has not yet been developed. In addition, it will be important to show that the mechanisms of mood regulation through absenteeism are unique from the affect regulation processes in Rosse and Miller's (1984) theory of adaptation to dissatisfying events at work.

***Utility maximization and choice.*** A common assumption of research on the short-term origins of absenteeism is that individuals *choose* to miss work. In both economic and psychological research, individuals are often presumed to make daily decisions to attend the work or non-work setting having the highest expected utility (Chelius, 1981; Winkler, 1980; Youngblood, 1984). Employees are thus absent when the expected utility of going to work is surpassed by the expected utility of engaging in an alternative, often home- or leisure-oriented behavior. Under this axiom, the accumulation rate of paid sick days should relate positively to the level of absenteeism, as Dalton and Perry's (1981) data show.

Moreover, absence levels in their study were higher in firms where unclaimed sick leave entitlements expired if not used within the absenteeism accounting period. Harrison and Hulin (1989) also noted an upsurge in individual-level absenteeism near the end of an entitlement period. In Martocchio and Judge's (1994) policy-capturing study, employees whose families were most dependent on their income (those for whom absences cost the most) were the least likely to decide to take an unpaid day off.

In keeping with its conceptual traditions, economic research on attendance choices assumes that employees rationally allocate their labor supply. However, such studies almost invariably use data aggregated over individuals and over time to test the validity of various individual-level, time-sensitive utility functions, and they almost always use archival surrogates for (marginal) utility rather than more direct measures. Johansson and Palme's (1996) investigation is a good example. After setting up a formal utility model that treats absenteeism as a day-to-day choice, they tested the model with data aggregated over a year, and they used wage rates as a surrogate for an individual's total absence costs. Balchin and Wooden (1995) provided a sophisticated theoretical treatment of absence, postulating a time-varying "penalty function" that reduced the utility of absenteeism to individuals by increasing its costs via the threat of dismissal (as one accrued excessive absences). The model was then fit to two years of firm-level data.

Interventions designed to change the short-term (dis)utility of absence or attendance have been fairly successful. These approaches are almost interchangeable with those in the behavior modification area, which also tend to use short time periods, in keeping with the operant principle that reinforcement or punishment should quickly follow the targeted behavior (Durand, 1986). For example, paid sick leave violates both economic and reinforcement principles of work attendance, providing virtually the same extrinsic rewards as working, but allowing employees to perform other, highly valued behaviors. "Well pay" and "personal time bank" programs redress this through the simple principle of increasing the value of attendance. Harvey (1983) reports two cases in which such programs worked in reducing absenteeism rates. Likewise, Stephens and Burroughs (1978) developed reward systems in which nurses received a cash bonus for either three straight weeks of perfect attendance, or perfect attendance on eight randomly sampled days from those weeks. Both systems produced the same, significant drops in absenteeism rates.

Durand (1983) used the incentive of a day's paid time off for every month of perfect attendance, and found a significant reduction in absenteeism relative to non-incentive months. Orpen (1981) used weekly cash rewards and observed the same effect. In a group-level wrinkle on this technique, Brown and Redmon (1989) set up alternating periods of reward contingency so that if an entire work unit met a 2-week criterion for attendance, all unit members had a choice of several rewards including a bonus and 4 hours of paid time off. Absenteeism in reward periods was 30-80% lower than in baseline periods. Reid, Schuh-Wear and Brannon (1978) used a 4-week criterion period, and more weekend days off as a reward. They reported less dramatic, but significant reductions in absenteeism (although we note that in both studies more stringent group norms, more posi-

tive personal consequences, or both, could be driving the results under such a system). These data also tend to suggest that incentive programs for attendance might be less susceptible to long-term negative consequences, such as the increases in other forms of withdrawal noted earlier—often a side effect of punishment (Arvey & Jones, 1985; see Kopelman & Schneller, 1981, for counter-arguments).

A critical feature of the short-term choice idea is that it explicitly considers the utility of *both* work and non-work alternatives. Despite this, only a small subset of absenteeism studies have explicitly estimated the value of specific non-work activities. Waddell et al. (1993) gathered such direct psychological data, demonstrating that individual beliefs that linked work avoidance to the prevention of back pain explained significant variance in absenteeism beyond medical indicators of back injury severity. Smulders (1983) found that time invested in leisure activities was positively related to absenteeism. Youngblood (1984) married some of the best elements of the psychological and economic approaches to show that direct psychological measures of the value of or “attachment” to non-work time was related to absenteeism.

Most studies in the choice paradigm beg the question of what people really do when they miss scheduled work. However, Haccoun and Dupont (1987) relate an interesting exception in a study conducted in Quebec. When the researchers interviewed people the day they came back to work from an organizationally recorded “sickness absence,” 72% admitted they had not been sick. Instead, they described a variety of other behaviors that they engaged in, such as resting, shopping, and recreating. To get such candor from subjects in research! A 1995 national survey done in the U.S. (Martinez, 1995) found only 24% admitting that they falsely called in sick, even once a year.

Overall, choice-based research has shown that decreases in the utility of absence and particularly increases in the utility of attendance, are consistently related to absenteeism patterns. Yet, the benefits of the approach have not been fully exploited. For example, the entitlement effect for paid absences could be studied as “loss avoidance” in the well-supported prospect theory of decision-making (Kahneman & Tversky, 1979). In addition, studies building on Youngblood’s (1984) approach would shed more light on how employees value their time off, perhaps starting to answer questions about why absenteeism varies over weekdays, months, and seasons. Experience sampling methods might help to identify the activities most likely to compete with work attendance, by providing real-time data on where people are and what they are thinking, feeling, and doing at random intervals. It would also be interesting to know if choice processes differ between those with positive versus negative job attitudes (perhaps the latter are more likely to consider “going” versus “not going/avoiding” work, rather a specific non-work alternative). Finally, it is clear that some inputs to attendance decisions cannot be expressed as utilities. Studies highlighting those other inputs are reviewed next.

***Elaborated decision models.*** Earlier we described how Martocchio and Harrison & Price (1993) and Harrison (1995) elaborated on social psychological theories (Ajzen, 1991) to produce a decision-making model in which attendance is

a direct function of short-term attendance intention. Intention, in turn, depends on attitude (anticipated personal consequences), subjective norm (perceived social expectations), perceived control (efficacy), and moral obligation (general ethical belief) regarding attendance. There is little doubt that when individuals are prompted to make attendance decisions, either because of the type of attendance being considered (e.g., volunteer work) or because they are filling out a decision-making questionnaire, their intentions predict absenteeism 6 to 90 days later (e.g., Harrison, 1995; Harrison & Bell, 1995; Martocchio, 1992). Support for an influence of attitude on intention is also shown in those papers, as well as in a meta-analytic review of studies applying the theory of reasoned action to other behaviors (Sheppard, Hartwick & Warshaw, 1988). In addition, work on expected utility and absences could be thought of as evidence for the importance of attitude, because attitude is conceptualized in a similar way.

Subjective norm is the recognition of how strongly the important referents in one's social environment approve or disapprove of one's own absence-taking. It is a likely conduit through which absence norms and cultures (Nicholson & Johns, 1985) affect attendance decisions. Reliable support for its role in the decision process is illustrated in each of the studies listed above, as well as in some normative methods of absence control. For instance, increased clarification and emphasis on social expectations for attendance in the Majchrzak (1987) and Schaubroeck et al. (1993) studies reduced absenteeism among Marines and university employees. Boudreau, Christian and Thibadeau (1993) reported 35-65% reductions in absenteeism when employees had to notify their immediate supervisor about missing work rather than a substitute coordinator. Ford (1981) documented that a similar change in reporting procedure curtailed some forms of unexcused absence, while raising levels of others. Werner (1992) noted a decrease in absenteeism after public recognition of individual attendance records. Markham and McKee (1995) showed that perceived supervisor standards for attendance were associated with individual absence rates.

Evidence indicates that the third proposed determinant of intentions, perceived control, plays into decisions when there is a non-trivial chance that attendance plans might be obstructed (e.g., an impending sickness: Harrison, 1995; Harrison & Bell, 1995). Anticipated illness was the most highly weighted, pervasively important decision parameter in Martocchio and Judge's (1994) scenario study. Nicholson and Payne (1987) also found health and illness to be the strongest, most consistent portions of employees' accounts of their own absenteeism. They concluded that attributing absence to medical illness is consistent with evolving social beliefs about what constitutes a legitimate reason for missing work. This conclusion converges with Rushmore and Youngblood's (1979) research, which demonstrated that medical absences were related to work and non-work motives. Data from Taylor et al. (1981) also uphold this idea. They documented a rise in absences among steel workers once they were *diagnosed* with hypertension; presumably the workers were hypertensive at least some time before their diagnosis. An interesting case for the importance of this as *perceived* rather than *actual control* comes from the jury in the O. J. Simpson criminal trial. Jury members and alternates put in the equivalent of seven full-time working



years of attendance before anyone was sick enough to miss a day of the trial. Over the course of the trial, they missed less than .25% percent of the trial days scheduled, less than 1/15th of the national average. Collectively, this work implies that perceived control might also reflect absence culture, characterized by causal loops between self-perceived causes of absence, attributions given for an absence, and responses of managerial control systems in defining its justifiability.

The equivalence of perceived control and self-efficacy is suggested by Ajzen (1991) and Martocchio and Harrison (1993). Building attendance self-efficacy or the perceived ability to attend work is the centerpiece of absence prevention programs developed by Frayne and Latham (1987; Latham & Frayne, 1989). They drew on social cognitive theory to illustrate the usefulness of self-regulatory training. By teaching employees with a history of heavy absenteeism to arrange environmental contingencies (work around attendance obstacles), establish specific goals, and connect their actions to positive outcomes, they significantly decreased absence rates in the short-term, as well as in a mid-term (12-month) follow-up.

The impact of moral obligation on attendance decisions is less clear. Although Harrison (1995) found it to be the most important predictor of attendance intentions among volunteers at a homeless shelter, its impact was less pronounced in studies of work and classroom attendance, and was inconsequential for attendance in organizational fitness programs (Harrison & Bell, 1995). The effect of personal standards on employee absence-taking noted by Markham and McKee (1995) might be construed as either an influence of moral obligation or merely a habit. Baum (1978) was successful in improving attendance by invoking notions of legal compliance. This might reflect the operation of moral obligation, subjective norm, or fear of negative consequences. Further research is necessary to determine for whom and in what situations this construct contributes to the motivation to attend work (or for that matter, the motivation to stay home and care for one's family).

The last point illustrates a weakness of the decision-making studies. Although they indicate that short-term decision constructs mediate the effect of mid-term and long-term variables (e.g., Harrison, 1995), little attention has been paid to moderators of the short-term effects (see Martocchio and Judge, 1994, for an exception). Until now, there has been little explicit theory or data on which to base moderator tests. However, the investigations reviewed below and some of the trends noted in this review suggest that gender, family responsibility, age, tenure or experience, commitment, and perhaps occupation, could be mid- and long-term variables that create different patterns of decision weights. Each is easy to measure reliably, not too intrusive, and fairly simple to test for in future research. The decision-making approach also pre-supposes some form of active processing. However, the low base rate for absences implies that most attendance is automated, scripted or habitual (Gioia & Poole, 1984). What types of things trigger the decision-making process, and for whom? A form of event-study methodology (McWilliams & Siegel, 1997) could help provide an answer, testing for "abnormal" absence rates (given past patterns) after acute stressors such as merg-

ers, layoffs (base closures), changes in pay policies, diagnosis of medical problems, or family illnesses.

### *Summary and Integration*

What are the origins of absenteeism? Clearly, there are many possible answers to that question, even after the benefit of several hundred studies published on the topic in the last 20 years. Just as clearly, some variables *are* part of the absence-taking process. We can forward a simple list. In the *long term*, gender, age, depression, smoking, heavy drinking, drug abuse, and exercise are all related to missing scheduled work. In the *mid term*, having high levels of job satisfaction, job involvement, and organizational commitment, doing meaningful tasks, working in a group or a culture with strict and salient attendance norms, working in a non-union environment (with less paid sick leave), working on the day shift, and working in an organization with flexible scheduling, all contribute to lower absenteeism. In the *short term*, a person who works under attendance incentives, who can somehow avoid acute stressors such as infections, injuries, and injustices, who can discount the utility of non-work behaviors, who enjoys attending work, and who feels social pressure to attend work with no impediments to do so, will surely have a stellar attendance record.

There were no qualifiers or caveats given in the list above. A growing amount of theory and data suggests that absenteeism has different origins for different people, times, and contexts (Johns & Nicholson, 1982). Therefore, our strongest recommendation for the next twenty years of absence research is to capture variance from heterogeneous samples of people, times, and contexts to try to identify those moderators. A study by Hackett et al. (1989) is an excellent example of such an approach. Over four months, nurses rated the daily levels of nearly twenty different events, perceptions and attitudes they experienced in their work and non-work activities—including the “desire to be absent” (something of a mix of attitude and intention). At between- and within-individual levels, the researchers found the “doldrums,” a factor analytic combination of stress, tiredness, ill health, personal problems, lack of sleep, and negative affect, consistently predicted desires to miss work, but only sometimes predicted actual attendance—perhaps because of its lack of justifiability. Although related to absence desire, it is possible that professional or organizational norms mitigated the relationship for actual absence. Other predictors of actual absences varied widely across nurses. Hackett et al. (1989) engaged two possible explanations for their findings. The first explanation is based on an attributional bias perspective (e.g., Nicholson & Payne, 1987) which concluded that personal illness is among the most socially acceptable reasons for absence. It is possible that nurses adjusted their ratings to give the appearance of justifiability. The second explanation rules out attributional response biases, arguing for the possibility that over time, events that define the doldrums may eventually lower employees’ resistance, justifying absences in the future.

Fine-grained work such as this (there are few such painstakingly detailed studies in any management research domain), especially with a broader set of subjects for whom more mid-term and long-term variables were measured, would

greatly clarify the complexities of the absenteeism picture. It would also begin to forge empirical connections between variables in different time frames. For example, do absence norm and absence culture salience have narrow or widespread effects on short-term attendance decisions? Does conscientiousness contribute to a higher overall level or just a higher level of sensitivity to these social variables? Are affective, normative and continuance commitment linked with attitude, subjective norm and perceived control, as their definitions would suggest? We look forward to more creative, cross-time research to help answer these and other questions about the origins of absence.

Although our focus is on absenteeism scholarship, this review of the origins of absence gives rise to considering ways practitioners might use sound theoretical rationale and evidence to formulate human resource management practices to avoid absence (e.g., by not hiring those who are likely to be absent because of predispositions or work attitudes) or manage absence (e.g., through the implementation of self-management training). After all, many research articles begin with a call for understanding absence so that it may be reduced; hence, leading to cost savings. Notwithstanding the strides made in better understanding and predicting absence, the results are still sufficiently equivocal: based on low to moderate effect sizes, with few studies that simultaneously assess the antecedents of absence in multiple samples across various time frames. Consequently, we hesitate to urge practitioners to factor absence as a key selection criterion or as a focus of training.

### Offshoots of Absenteeism

Offshoots of plants are sets of branches that grow from the same stem or roots, and that leaf or flower at the same time. In management research terms, an offshoot would be a simultaneous covariate, operating in the same time frame and sharing some of the same causes as the construct of interest. Lateness, turnover, grievance-filing, misconduct and performance have all been studied as offshoots along with absenteeism. In this section, we review the theory and evidence associated with these covariates. Again, we use the time framework to help organize the literature, moving from long-term to short-term hypotheses.

#### *Theories and Guiding Hypotheses*

**Deviance.** The “deviance” approach is one of the chief sources of ideas about long-term covariation among absence, lateness, turnover and other forms of “organization delinquency” (Johns, 1997). Again, rather than an explicit hypothesis, the deviance approach is more aptly described as a proposition in use. The core idea in this viewpoint is that some people carry levels of personality traits that make them pre-disposed to engage in a wide variety of behaviors that would be detrimental to an organization (Robinson & Bennett, 1995). Over several years, these contrarians are expected to incur consistently high levels of absence and lateness, have poor performance, abuse drugs and alcohol, file more grievances, display more hostile and aggressive behaviors, and churn through jobs (Hogan & Hogan, 1989).

**Performance Dimension.** Another identifiable long-term approach is the notion that absenteeism is a mainstay of a broad dimension in the individual criterion space. Correlations of counter-productive behaviors (e.g., theft, sabotage, rule-breaking; Ones, Viswesvaran & Schmidt, 1993) with other performance dimensions stem from general (and stable) cognitive abilities and personality traits. Borman and Motowildo (1993) describe attendance-related behaviors as one of three basic dimensions of performance, part of intra-role or role-inclusive behaviors. Hunt (1996) asserts that attendance is a form of generic work performance, as opposed to specific or contextual performance.

**Job (Dis)satisfaction.** Hulin and his colleagues (1991; Hanisch & Hulin, 1990; Hulin et al., 1985) have offered hypotheses about mid-term covariation among offshoots of absence. Typically falling under the rubric of "withdrawal," and perhaps serving as part of a broader set of "adaptation" or "adjustment" responses, these behaviors include lateness, leaving early, taking long breaks, daydreaming, as forms of *work* withdrawal, and early retirement, turnover, and others as *forms* of job withdrawal. All elements of these behavioral families could be thought of as forms of disengagement from work, and all are presumed to be expressions of or reactions to job dissatisfaction. In several forms of the withdrawal hypothesis (see the specific sub-models below), these behaviors are expected to covary positively over mid-term time periods.

Farrell, Rusbult and their colleagues (Farrell, 1983; Rusbult, Farrell, Rogers & Mainous, 1988) have developed a similar mid-term model from a social exchange framework. They classify responses to (dis)satisfaction along active-passive and positive-negative continua, creating four clusters or quadrants of behaviors: exit, voice, loyalty and neglect. Behaviors within each category are also expected to covary positively. Absenteeism is a form of neglect, which is nearly identical to the concept of work withdrawal. Turnover (job withdrawal) anchors the exit quadrant.

**Relative Dissatisfaction and Withdrawal.** Rosse and Miller's (1984) adaptation model also deals with satisfaction and withdrawal, but arguably in a short-term time span. Their theory contends that *relative* dissatisfaction—a downward *change* in one's affective state—sparks a search for and choice from remedial behaviors. The chosen behavior reflects one's reinforcement experiences, social norms and perceived constraints. Rosse and Miller also note that combinations of affective stimuli and behavioral constraints create several possible patterns of covariance among withdrawal behaviors: *compensatory forms*, *alternate forms*, *independent forms*, *spillover*, and *progression*. The independent forms model asserts that withdrawal behaviors do not share causes, predicting zero covariances among them. The data overwhelmingly refute this notion (see *Evidence* below). Therefore, we turn to the others.

Timing is critical for differentiating the remaining models. We also find it easier to use analogies when discussing and thinking about them. For example, if we equate hunger with relative dissatisfaction, the compensatory forms model holds that eating one type of food reduces the need for eating another, as both serve the same function. The alternative forms model is similar, but it includes separate thresholds for different types of behavior, determined by situational

constraints (I don't have time for a meal now, so I'll have a snack). Both models can predict negative *within-person* covariances among behaviors in the short-term. Eating tends to reduce hunger, at least for a while. Depending on how long a withdrawal behavior alleviates dissatisfaction (satiates one's hunger), we might also expect negative covariances in the mid-term as well. The conceptual and empirical keystone is specifying how long it takes dissatisfaction to resurface. If researchers aggregated withdrawal behaviors over commonly used time periods, compensatory or alternate forms processes would be obscured. Instead, variance due to individual differences in the strength (amplitude) and repetitiveness (periodicity) of motivational rhythms would be highlighted (Fichman, 1984).

Spillover and progression models predict positive covariances among withdrawal behaviors. The first model is mute with respect to time. Each behavior simply loads positively on the general withdrawal construct. To bring back our analogy, after conditioning on average levels of hunger, eating one meal has no implications for the likelihood of eating another. This does not seem likely in the short term, especially given constraints on the total levels of lateness and absence that can transpire before punitive measures begin. On the other hand, the progression model implies differences in conditional or marginal covariances, predicting a rising trend over time as one moves through increasingly more serious or extreme forms of withdrawal. It is an appetite-whetting model, specifying an upward spiral of eating that eventually ends in a coronary (turnover). Because turnover is an end state (it must follow absenteeism), we review evidence for the progression model in the Outcomes section. However, we do note that subtle complexities in the progression and other short-term withdrawal models create a strong need for mathematical statements of their premises. Time should be a central variable in those statements.

### *Evidence*

***Long-Term Covariation.*** Support for the idea that deviant personality traits contribute to a long-term syndrome of dysfunctional work habits (including absence-taking) first rests on consistency of behaviors over time. This condition is easily met, as we noted earlier that year-to-year absenteeism correlations are fairly high (e.g., Farrell & Stamm, 1988), even when situations change (Ivancevich, 1985). In addition, Adler and Golan (1981), Clegg (1983) and Blau (1995) report strong consistencies in lateness over successive years. Dickter, Roznowski and Harrison (1996) and other studies also present evidence that those who are most likely to quit their present job are those who have quit many prior jobs. Turning to inter-behavior connections, Chen and Spector (1992) report positive correlations among self-reported absence, anger, and aggressive and hostile work behaviors. Furthermore, Robinson and Bennett (1995) identified unexcused absenteeism as part of "production deviance" behaviors perceived by employees. The behavior set included leaving early, taking excessive breaks, wasting time and wasting other organizational resources. Perceptions aside, correlations between multi-year totals of these and other behaviors have not been forthcoming in the literature (Hogan & Hogan, 1989, reported factor analyses of 18-month totals for 13 different behavioral and ratings criteria, but they forced an orthogonal structure on their

six-factor solution). And, from our review of absenteeism's origins, correlations between personality dimensions and absence-taking are suggestive, but not yet conclusive. Therefore, the viability of the deviance model is still in question and in need of careful long-term research. Such research should take advantage of the fact the deviance model is based on generic (not just work-related) traits, and could include measures of quitting, absenteeism, lateness and similar behaviors from settings and organizations other than work whenever possible (e.g., Harrison & Price, 1993).

In contrast to the deviance results, absenteeism's place on the performance map seems firmly established. For example, Hunt (1996) presented single-source data comprised of supervisor ratings of behavioral frequency for over 18,000 employees in a wide variety of jobs. He identified absence, lateness and long breaks as part of non-adherence to one's work schedule, placing it (via multi-dimensional scaling) in the center of the work performance space. Factor analyses strongly linked it to drug misuse, theft, unruliness and off-task behavior across datasets from eight different occupational groupings. In a meta-analysis, Bycio (1992) demonstrated a consistently negative correlation between absenteeism and performance rated in the same period. He also showed that the relationships could not be attributed to stereotypes or implicit theories of supervisors, as some of the performance data were records- rather than ratings-based. Since that meta-analysis, Tharenou (1993) and several other authors have reported negative correlations between concurrent levels of some form of absence and performance in multiple-source data (e.g., Puffer, 1989).

**Mid-Term Covariation.** There is growing evidence that absenteeism can reliably be grouped with other withdrawal behaviors within a given mid-term period, and that this set of behaviors can be predicted by job satisfaction. The most common data are single-source, either self- or supervisor reports. Rosse and Hulin (1985) show positive correlations among the frequencies of various self-reported forms of withdrawal, such as day-dreaming and taking frequent breaks, in their work avoidance scale. They did not report correlations between this scale and archival records of lateness, absence and turnover, but they did observe that negative job affect was negatively related to absence and turnover, but not lateness (which had an extremely low base rate), and was weakly related to avoidance over several subsequent weeks. Roznowski and Hanisch (1990) tackled compatibility arguments directly, showing that a broad index of self-reported withdrawal behaviors not only exhibited acceptable levels of internal consistency, but was more strongly correlated with satisfaction than single behaviors such as lateness and absence. Hanisch and Hulin (1990, 1991) obtained positive correlations among several different self-reported forms of work role withdrawal, as well as job withdrawal (turnover and retirement intentions), in three different samples. In each sample they also documented negative correlations between both forms of withdrawal and satisfaction. In another investigation, Lehman and Simpson (1992) found that self-reported psychological and physical withdrawal scales were both internally consistent and positively related to one another. Finally, Puffer (1989) also noted that supervisor ratings of various withdrawal or "non-

compliant" behaviors were positively correlated, forming a coherent behavioral composite.

Archival behavioral data have also shown relationships predicted by the withdrawal approach. Mitra et al. (1992) reported a corrected meta-analytic correlation of .33 between absence and turnover. Adler and Golan (1981), Beehr and Gupta (1978), Clegg (1983) and Blau (1985) found positive correlations between concurrent records of lateness and absenteeism. Hogan and Hogan (1989) presented data illustrating that records of various absence-taking and grievance filing were positively associated with one another. They interpreted this behavioral cluster as passive aggression against the firm.

The passive aggression factor is quite similar to what Rusbult et al. (1988) term neglect, which is verbally and operationally defined in ways that make it equivalent to work withdrawal. Using a mix of inductive and deductive approaches in a multi-stage study, Farrell (1983) derived a space of perceived reactions to job (dis)satisfaction that fit the exit, voice, loyalty and neglect theory. Rusbult et al. (1988) found support for the internal consistency of a set of neglect behaviors that included absence and lateness—in a judgment task, a lab experiment and a field study. In addition, they showed that neglect behaviors invariably had negative relationships with (manipulated and measured levels of ) job-related affect. All of this evidence appears to support either spillover or progression models of withdrawal, at least in mid-term time periods.

**Short-Term Covariation.** There are very few investigations of the short-term relationships among proposed offshoots of absence. Lack of access to daily or weekly data, and the low base rate of most of the target behaviors, make studying the short-term models difficult. In one study, Leigh and Lust (1988) reported no connection between self reports of absence and lateness in the past two weeks. Using time-sensitive statistical techniques, Fichman (1988) and Harrison and Hulin (1989) found that an involuntary absence or scheduled holiday in one's recent attendance history lowered the daily probability of taking a voluntary absence. These results appear to support compensatory or alternative forms models of withdrawal in the short-term. A crucial piece of data missing from those results, however, is an assessment of job satisfaction. In fact, full-blown investigations of Rosse and Miller's (1984) theory would require short-term *vectors* of satisfaction data, to find out whose attitude or affect had just taken a down-turn. Daily rating methods used by Hackett et al. (1989) and Totterdell et al. (1995) are well-suited for such studies.

### *Summary and Integration*

What are the offshoots of absence? Within (*mid-term*) time periods spanning a few months to a year, absenteeism is fairly consistently related to other work behaviors and dimensions of performance. The composite it belongs to seems to be a loosely organized set of "disregardful" actions, involving reductions of attention or effort. The set may also contain forms of organizational retribution or retaliation. These behaviors stem, in part, from job dissatisfaction; negative job affect makes doing them more likely. In the *short term*, however, it is not clear how, or even if, absence and other responses to aversive jobs are chosen, and how

doing one might affect the likelihood of doing others. Equity theory approaches might provide some answers in that regard, as it predicts a variety of reduced cognitive and behavioral inputs as reactions to the dissatisfaction associated with violations of distributive justice (e.g., Guerts et al., 1994). Formal theory and computer simulations would also be welcome in sorting out the possibilities. In the *long term*, we do not know whether a similar composite of behaviors hangs together, or what its conceptual roots would be. Good first candidates for investigation might be conscientiousness or negative affectivity (neuroticism) dimensions of personality. We enthusiastically await new absence research that incorporates them.

In terms of practical implications, it might seem from the array of offshoots that reducing one or more (e.g., lateness), through some program or intervention might lead to reductions in absence-taking, or vice versa. If successful, practitioners would be killing two (or more!) birds with one stone. Focusing on reductions of a single behavior, however, might simply make other forms of neglect more likely or more frequent. Clear predictions about when and where this is likely await greater theoretical precision in the various withdrawal models, and carefully controlled studies that focus on the possible conjoint roles of different behaviors. At this juncture, the only safe route would be interventions to improve overall job satisfaction, with at least one of the roots of these multiple offshoots.

### Outcomes of Absenteeism

Nearly all empirical research on absenteeism is based on hypotheses that consider it a dependent rather than an independent construct, perhaps because it has been regarded as the root problem to be solved. In the same way, there has been a long-standing assumption that absence is dysfunctional for the organization. However, Mowday et al. (1982) reinforced the idea that absence has different results for different constituencies, and that these results may be positive or negative. Despite this and other arguments for the duality of consequences (Staw & Oldham, 1978), most research has focused on costs of absence. Before reviewing this research, we first discuss the Goodman and Atkin (1984) framework, which is the only comprehensive conceptual treatment of absenteeism's outcomes.

#### *Theories and Guiding Hypotheses*

**Multiple outcome - multiple constituency model.** Goodman and Atkin (1984) built on the earlier ideas of Mowday et al. (1982) to bring together a broad array of possible positive and negative outcomes of absence-taking. They organized these outcomes by their effects on a variety of constituencies: the individual absentee, coworkers, work group, managers, organization, union, family and society as a whole. One interesting feature of their framework was the explicit recognition of conflict between positive outcomes for one constituency, such as the reduction of job-related stress for the absentee, and negative outcomes for another, greater stress because of higher work load for the absentee's coworkers. This creates a distinct social dilemma. Their list of 41 outcomes far exceeds the



number studied, and only a handful have been studied concurrently. Nevertheless, several empirical investigations have relied on this framework for conceptual guidance. The rest of the empirical work on consequences borrows propositions from other domains (e.g., attribution theory) or uses implicit and explicit ideas in absenteeism theories discussed above (e.g., stress reduction/adaptation, motive fulfillment). As with the other sections of this review, we organize that research in terms of time frames—in this case how soon the consequence is expected to *follow* absenteeism. Within those time frames we highlight outcomes for three sets of constituents suggested by Goodman and Atkin: (a) the individual absentee, (b) his or her immediate social environment, and (c) his or her organization.

## Evidence

### *Short-Term Outcomes*

**Individual.** The most pressing job-related concern after taking an absence is getting back to work. Fichman's (1984) theory implies that just as unfulfilled motives to do activities outside the workplace (e.g., wanting to spend time with family) lead to absence, unfulfilled motives pertaining to the work domain (e.g., wanting greater professional status) instigate attendance spells. Although fairly intrusive and maybe downright obnoxious for those recuperating from illness, asking return-to-work questions of those who are currently absent would allow powerful tests of short-term attendance motivation, decision and economic theories (e.g., Martocchio & Harrison, 1993). The base rate for returning to work from an absence is higher than incurring one, and the event that triggers conscious processing (the absence) has already occurred. It would also be a terrific time to test hypotheses about justifiability (Nicholson & Payne, 1987), especially when the absentee has already expressed a reason to his or her organization for missing the first day. At present, however, data addressing this very short-term outcome is restricted to only a few studies. Lee (1982) used outpatient interviews and medical case histories to show that those with physically demanding jobs and families with them at home took longer to return to work after minor fractures. Johnson and Ondrich (1990) also studied the transition back to work after injury, replicating the family effect of Lee, as well as showing that those who were paid more were quickest to return. Allen (1996) found a similar effect of family size on absence duration.

The contention that absences serve as safety valves for discharging accumulated stress (or negative affect) is part of several theories. Do people really feel better after taking an absence? There has been little short-term work to see if this is indeed an *experienced* rather than merely an *anticipated* outcome of absenteeism. Hackett and Bycio (1996) noticed downward, then upward, shifts in affective and control variables in a small sample of nurses going through working, then absent, then working days. They suggested absenteeism served a maintenance rather than affect-enhancing function. In a remarkably detailed study, Totterdell et al. (1995) used pocket computers to prompt nurses on various work schedules to complete affective ratings and cognitive tests every two hours during work, as

well as on off (but not absent) days. They found that time off was adaptive for cognitive functioning, but not necessarily for affect.

Altered perceptions, such as attributions, are another potential short-term response to one's own absenteeism. Haccoun and Desgent (1993), Nicholson and Payne (1987), and a national survey found that the vast majority of individuals attributed recent absences to factors outside their personal control. Judge and Martocchio (1996) also argued and demonstrated that control-related (personal illness and kinship responsibility) factors dominated attributions about one's absenteeism history. Such attributions are also more justifiable to organization members, and can help to circumvent disciplinary outcomes (see below). Whether such attributions are self-serving or even self-deceptive, the next important step in this line of work is to complete the cycle—connecting styles of attributions about past absence to future-oriented constructs such as perceived ability to attend (Frayne & Latham, 1987). Weiner's (1986) theory of attribution dimensions and motivation might serve as a rich source of hypotheses.

**Social.** Coworkers and supervisors also have perceptual reactions to someone else's absenteeism. Coworker attributions and perceptions can either build or break down the infrastructure of absence norms and cultures. Coworkers are also frequently charged with covering the assignments of the missing employee, leading to thoughts of inequity, negative affect and further increases in absenteeism (Guerts et al., 1994). In addition, Smithers (1995) reported that when a fellow employee was absent, transplant coordinators had to increase their shift coverage (being available 2 of 3, or 3 of 3 shifts in a day), and had identifiable reductions in performance and increases in fatigue.

Supervisors not only perceive and process individual absence-taking, they must decide what action to take about it. Stone and Conlon (1988) showed that students who role-played managers as well as managers themselves (Conlon & Stone, 1992) responded to descriptions of an employee's absenteeism in ways that reflected not only the frequency of past absences, but also the patterning of absences over time. Martocchio and Judge (1995; Judge & Martocchio, 1995) studied supervisors' responses to hypothetical incidents of employee absence in the context of a formal disciplinary procedure. They argued that sanctions for absence contribute to the maintenance of negotiated norms regarding acceptable versus unacceptable behavior in the workplace. They found that supervisors administered more severe disciplinary decisions to employees with greater absence history, below average job performance, unapproved absences, probationary status, or who had been physically able to attend work. Using ideas from Arvey and Jones (1985), they also noticed that the degree to which supervisors valued fairness moderated relationships between attributions regarding the cause of absence and the disciplinary action taken. In ensuing work, the normative consistency of these findings might be strengthened by comparing them to records of arbitration, grievance, or disciplinary cases.

#### *Mid-Term Outcomes*

**Individual.** Goodman and Atkin (1984) reasoned that employees often justify their absences with external attributions—believing that their own

instances of missing work were due to problems inherent in their jobs. *Over time*, this process should lead employees to have more negative job attitudes. At the outset of this review, we mentioned that research also tends to support for this prediction, in two-wave (e.g., Clegg, 1983) and multi-wave (e.g., Rosse & Hulin, 1985) investigations. Clarification of the interplay of absences and attitude over time should be a top priority in future studies.

Goodman and Atkin (1984) also proposed that individual performance can go down after absences because of lost opportunities to gain familiarity, experience and knowledge about work routines and interactions. Tharenou (1993) obtained the most direct support for this idea, finding that absenteeism in training was negatively correlated with future performance. Data from miners in Goodman and Garber's (1988) study showed positive correlations between absences and yearly accident rates, ostensibly because frequent absentees had less familiarity with physical machinery, materials and safety practices. Finally, authoritative evidence of an absenteeism→overall performance connection is given in Bycio's (1992) meta-analysis. He reported a corrected correlation of  $\rho = -.20$  between past absenteeism and future performance from cumulative evidence in 19 studies. However, because 75% of the study-to-study variation in effect sizes could not be explained by simple artifacts, conceptual and empirical work in the next 20 years needs to more precisely determine *when* higher levels of absenteeism lead to diminished performance.

Another potential outcome of absenteeism is turnover. Is absenteeism an employee's first foot out the door? One perspective casts absence as an alternative to turnover, rather than a precursor (Dalton & Todor, 1993). Staw and Oldham (1978) have argued for and found evidence that absence provides coping opportunities outside the work place, especially when a person holds a job that is incompatible with his or her abilities and preferences. On the other hand, the progression viewpoint presumes that the problems that instigated absence will persist, leading to a move from temporary (absence) to permanent (quitting) withdrawal. Recent meta-analytic evidence provides support for the progression model (Mitra et al., 1992). Absence-turnover correlations are also lower for lags greater than one year ( $\rho = .29$ ) versus less than one year ( $\rho = .37$ ). That is, the relationship is stronger over mid-term rather than long-term spans. Several studies also suggest that progression might well be a short-term process, with surges in absence-taking in the few weeks before quitting (e.g., Sheridan, 1985). More definitive evidence for progression could involve case-control designs (leavers matched on various features with stayers), and repeated measures of job affect.

**Social.** As with conventional ideas about the negative impact of absence on individual job performance, many researchers presumed that absence negatively influences group performance as well (e.g., Steers & Rhodes, 1978). For example, Goodman and Leyden (1991) used the multiple-constituency model to propose that higher absenteeism rates reduce synchronization and familiarity among members of mining crews, which, in turn, reduces group productivity. Using data from the same mining crews as Goodman and Garber (1988), they found that this was indeed the case. Moch and Fitzgibbons (1985) challenged this view, arguing that the relationship between absence and work unit production

efficiency is moderated by workplace automation, and anticipating/planning for absences (although the efforts necessary for the latter clearly make it a cost-laden outcome of past absenteeism). They supported both hypotheses in observations of mid-term levels of productivity for assembly and packaging plant employees. Theories of group performance (cf., McGrath, 1984) shed some light on these findings, suggesting that when tasks are highly interdependent, require complex coordination, and draw on different skills from different members, group performance suffers from member absenteeism. The increasing use of teams in organizations makes this linkage not only more important to study, but also more "study-able" in ongoing work groups.

### *Long-Term Outcomes*

**Individual.** If increased absenteeism leads to decreased performance in the mid term, then it could lead to decreased levels of other valued outcomes in the long term. The most likely consequences are reduced pay (under performance-contingent compensation) and fewer promotions. In the sole available study of the former idea, Ippolito (1996) conceptually and empirically linked absenteeism rates to lower pay, concluding that half of the gender gap in wage rates could be traced to differences in expected "reliability" (showing up for scheduled work). Although investigations of the latter idea seem fairly straightforward, no long-term evidence has appeared.

**Social.** Business trends in the last 20 years have focused a great deal of attention on clients and customers. For an increasing number of jobs, they are also an important part of the absentee's social environment. Bowen and Twemlow (1978) made more explicit propositions about what had always been assumed in health care organizations, that employee absenteeism resulted in poorer patient care. Others have extended the notion to most types of customer service. Empirically, Durand (1983) showed significant decreases in behavioral disruptions by clients at an institution for the mentally retarded when absenteeism declined. Ehrenberg et al. (1991) found that teacher attendance rates and student performance were also positively correlated across primary schools. We note for future research that the effect of absence on clients or customers may be most pronounced when employees provide a customized or personal service; that is, when what they deliver is a unique or non-imitable commodity.

**Organizational.** Fiscally, absence is quite costly to organizations (Martinez, 1995; Shelly, 1993). Most management-oriented articles begin by stating this fact. Bottom-line impacts tend to be based on paid sick leave or costs of employee replacement, which involve conservative figures. If one were to include (potentially) reduced productivity, the expense of maintaining absence measurement and control systems, and reductions in customer service effectiveness, these costs would certainly be much higher than even the multi-billion dollar estimates cited above. Of course, these estimates have to be tempered by whatever outlet absences serve to regulate the potential negative effects of accumulating employee stress or negative affect—but those data are still fairly sketchy.

Other evidence of its costliness comes from studies of absence reduction or prediction efforts. Robins and Lloyd (1983) report a 26% increase in productivity

under an attendance control regimen. Harvey (1983) reports long-term reductions in organizational costs for both a hospital and a non-profit firm. Schotzhauer and Rosse (1985) report a 12% return on investment (in terms of reduced sick leave costs) for an incentive program. Martocchio (1992) used the theory of reasoned action (Ajzen & Fishbein, 1980) and behavioral costing approach to estimate the variable financial cost of absence decisions made by 440 employees over three months. Although only 5% of the variance in absence could be accounted for by intentions to be absent for clerical employees, and 2% for a group of blue collar workers, this translated into \$25,000 in wage costs.

### *Summary and Integration*

What are the outcomes of absenteeism? Evidence here is the least well-developed. Still, some trends are apparent. In the *short term*, people attribute their past absences largely to external causes; they are less forgiving about the absences of others. Supervisors, who usually deliver the organization's response to an absence, are more likely to (severely) discipline someone when they have a consistent record of absence-taking, especially when attendance histories and mitigating factors can be construed to support a pattern of willful absenteeism. Past absenteeism is associated with more negative affect, a higher likelihood of turnover and lower performance in the *mid-term* future. The causal mechanisms for affect and performance are not well-established, but turnover data support a progression of withdrawal. Furthermore, although absenteeism seems to have complex effects on group functioning, it is clearly and substantially costly for organizations in the *long-term*. Finally, because the theoretical and empirical foundation for absenteeism's outcomes is the thinnest of the three reviewed areas, we think the opportunities here are the greatest for making major contributions to the absenteeism literature. We are optimistic that these and other contributions will appear in the next few years.

Progress on conceptualizing and documenting the negative outcomes of absence should spur those who view it as less problematic than other dysfunctional events (e.g., employee theft), to give greater consideration to absence control. Evidence about absenteeism's consequences suggests that effective management of it could lead to improvements in productivity, service delivery, and the overall fiscal condition of the organization. It might also halt progressively negative effects on individual performance and retention as well. In any case, given the high potential utility of further research on outcomes, practitioners might help themselves by allowing greater access to scholars investigating the topic.

### **General Discussion and Conclusions**

We believe the time was ripe to provide a careful assessment of the absenteeism literature. The past 20 years have seen a steadily growing interest in absenteeism and a diversified empirical effort applied toward our understanding of it. The knowledge base is now substantial, particularly given the special challenges that absence research involves (Martocchio & Harrison, 1993). Theories

have gone from simple, bivariate propositions-in-use—to complex, multi-faceted explanations. Nevertheless, we have some general suggestions for improvements.

Effect size magnitudes varied from study to study of the same phenomena (e.g., job satisfaction and absence), but generally extended from the low ( $r = .10$ ) to moderate ( $r = .30$ ) range for origins, offshoots, and outcomes of absence (Cohen, 1977). Of course, there are several plausible methodological (e.g., reliability of the measures) and theoretical (e.g., perceived or actual constraints for the attitude-absence relationships) explanations for the effect size differences in these studies. We urge scholars to consider them when evaluating these studies, and endorse a call for factoring these considerations into the planning phase of future research on absenteeism (Martocchio & Harrison, 1993).

Moreover, we urge researchers to conduct investigations that concurrently include a broader range of origins, offshoots, and outcomes—for two reasons. First, incorporating broader ranges of absence correlates will help move us to a more complete understanding of the factors that antecede and flow from absence episodes, especially in different time periods. Second, such research will offer researchers information about the relative magnitude of effects. Current practice, which still tends to emphasize very few origins, offshoots, or outcomes in any one study, bounds us from making inferences about the relative import of variables that bear on absence.

As the structure of our review has emphasized, future work on absenteeism needs to have a more thoughtful conceptual and empirical treatment of time. Approaches that link long-term, mid-term, and short-term time frames will be the most effective for integrating existing findings. In addition, more fine-grained investigations (e.g., Hackett et al., 1989) and big, broad studies (mimicking the positive features of the epidemiological approach) that capture multi-level cultural, industry, organizational, group and individual sources of variance, will be the most helpful in pinning down the moderating relationships hinted at in current research.

Finally, it is likely that future investigations of absenteeism will have to deal with a moving target. As the temporal/physical boundaries dissolve between job and home (e.g., telecommuting), greater attention needs to be paid to the changing work-family interface, and to its implications for changing the substrates and perhaps the very *meaning* of absence (e.g., Goff et al., 1990; Rousseau, 1978). Still, we wish to emphasize that research on absenteeism is more healthy, robust and cumulative than 20 years ago. Given the vigor, vitality, and variety of existing absenteeism research, however, we are confident that even under those conditions the next 20 years will witness great strides in what we know about missing scheduled work.

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## Notes

1. These ideas can be represented formally in the following heuristic equation:

$$\sigma_{(t=M)} = f[\sigma_{(t=L)}] + g[u_{(t=M-1)}] + u_{(t=M)} + \epsilon.$$

where  $t$  refers to time,  $L$  is long-term, and  $M$  is mid-term. The  $u$  terms in the model refer to unique variance, and is random error. The  $f$  and  $g$  terms are weights (loadings) for the long-term and carryover components, respectively. When squared and combined with  $u^2$ , these weights add up to unity. The  $u$  components are a form of systematic variance *within* mid-level time periods that is distinct from long-term periods. This unique variance is defined in both the present and immediate past. It reflects an autocorrelation between those contiguous times (in structural equations language,  $g$  would refer to a form of correlated error, although "error" would be a misnomer here).

Equation 1 also has implications for estimating the reliability of absenteeism measures, which is crucial for evaluating or adjusting the strength of empirical findings (Hackett & Guion, 1985; Steel, 1990). As long as  $g$  is non-zero, it would be *inappropriate* to aggregate a series of mid-term subtotals as "items" (e.g., Blau, 1985), and then estimate reliability via coefficient  $\alpha$  or the Spearman-Brown formula. When  $g$  is zero, there is no period-to-period carryover. The equation then reduces to a well-known, congeneric version of classical measurement theory, which assumes that construct levels on one item do not depend on answering (or in this case, living through!) a previous item.

2. The formal expression of these ideas has a general equivalence to Equation 1, except that now the common proportion (weighted by  $f$ ) is due to mid-term sources of variance, and  $S$  refers to short-term. The  $u$  terms also reflect variables that change over shorter intervals, with the same structure and caveats defined for mid-term periods:

$$\sigma_{(t=S)} = f[\sigma_{(t=M)}] + g[u_{(t=S-1)}] + u_{(t=S)} + \epsilon.$$

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