



# The construct validity of vigor and its antecedents: A qualitative study

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## ABSTRACT

Our first objective in this qualitative study was to validate the conceptualization of vigor as comprising physical strength, emotional energy and cognitive liveliness. Our second objective was to explore vigor's work-related antecedents. We applied theme analysis to the contents of interviews held with 38 randomly selected employees. The results clearly supported the three-component conceptualization of vigor as most employees (77%) related to vigor as a multi-faceted variable. The most frequent work-related antecedents of vigor that emerged from the interviews were meaningful interactions with others, coping with challenging situations, and achieving success on a project. By superimposing the Job Characteristics Model on these qualitative findings, we inferred from the items describing vigor's antecedents that job significance, supervisory feedback, and job identity were the most frequently mentioned antecedents of vigor at work. Additionally, we found indications of a spillover effect of vigor from the home to the work domains.

## KEYWORDS

Job Characteristics Model ■ positive affect ■ qualitative methodology ■ vigor

The current study focuses on the positive affect of vigor, as experienced by individuals at work. The construct of vigor goes back a long way in human history; for example, the Taoist culture of ancient China refers to Chi and Jing as representing the feeling of having internal energy and power which

can be accessed by individuals, depending on their lifestyles and personal habits. Furthermore, in ancient Japanese cultural traditions the concept of *Ki* related to one's feelings of being able to mobilize mental and physical energy (Peterson & Seligman, 2004). In the context of work, vigor represents a discrete, positive affective response to one's ongoing interaction with specific elements within the work environment (Shirom, 2004). Feeling invigorated denotes a combination of a positive energy balance and pleasantness or contentment. Someone who feels tense, anxious or angry may feel energized; however, this feeling is coupled with unpleasantness and displeasure, unlike feeling vigorous.

Why is the scientific study of vigor important? Most people desire feeling energetic and view it as a significant dimension of their affective experiences. For example, it was found that a major reason people engage in physical activity is to experience vigor (Hansen et al., 2001; Reed & Ones, 2006). As indicated below, vigor was found to be associated with highly important individual and organizational outcomes. Additionally, because vigor constitutes a positive affect, reasons discussed in the literature for studying positive affective states (e.g. Lyubomirsky et al., 2005) apply to vigor as well.

Theoretically, focusing on one's feeling regarding one's energetic resources is derived from Hobfoll's Conservation of Resources (COR) theory (Hobfoll, 1989, 2001). According to this theory, people are motivated to obtain, retain, and protect their resources, which can be material, social or energetic. We conceptualize vigor as comprising one's feelings of possessing physical strength, emotional energy, and cognitive liveliness (see Shirom, 2004), for several theoretical reasons. First, these resources are all individually possessed, whereas work-related resources such as authority or autonomy are other-dependent. Second, these components represent the three most salient domains of energy that humans possess: physical, emotional, and cognitive. Third, Conservation of Resources theory (COR; see Hobfoll, 2002) postulated that personal resources affect each other and exist as a resource pool, and that together they represent a set of resources internal to the self that facilitates the development and use of other resources (Hobfoll & Shirom, 2000). Fourth, they are a major precondition to any goal-directed behavior and thus are essential for one's survival (Hobfoll, 2002). Fifth, they represent a coherent set that does not overlap any other established behavioral science concept, like resilience or potency, or any aspect of the self-concept, such as self-esteem and self-efficacy. Furthermore, this conceptualization of vigor clearly differentiates it from its likely consequences like engagement or job involvement and it is socially embedded, in that emotional energy always concerns significant others in one's social milieu.

Based on Lazarus and Folkman's appraisal theory (1984), we consider individuals' appraisals of their energetic resources as theoretically distinct from the feeling of vigor. In nature, these appraisals and the feeling of vigor probably appear conjointly, mutually affecting each other over time. The focus on vigor as an affect follows the cognitive-motivational-relational theory developed by Lazarus and his colleagues (e.g. Lazarus, 1991), and the categorical approach to affect, which focuses on discrete affective states like love, anger, pleasure and joy (Lazarus, 1991). Lazarus (1991) argued that discrete affective states provide a rich source of information, as each state is associated with a specific core relational theme, coping implications, and further that each affect has distinct antecedents and consequences. We posit that focusing on vigor as a positive affect and on its antecedents has the potential of enriching and extending our understanding of employees' attempts to survive and flourish within their work environment. Following past research (e.g. Fisher, 2000), we use the term affect to refer to both emotions and moods as two relatively distinct phenomena. A recent text (Niedenthal et al., 2006) provides a long list of researchers who defined affect as a collection of cognitive evaluation and labeling processes. Moods tend to be longer lasting, are often mild in nature and represent relatively enduring affective states of uncertain origin, while emotions are more intense, tend to be short-lived, and have a clear object or cause (Brief & Weiss, 2002; Kelly & Barsade, 2001; Scherer, 2000; Weiss, 2002). Vigor is closer to a mood state in that it was conceptualized as lasting considerably longer than momentary emotions; however, because it is contextualized in the work situation we refer to it as an affect.

Why focus on vigor? Vigor was found to represent a unique type of affect, distinct from affects whose core content represent calm energy, such as pleasantness and contentment, in a study conducted by Russell and Steiger (1982). Using multidimensional scaling analysis to identify significant clusters of 48 emotional states, vigor was found to represent a cluster distinct from neighboring clusters that loaded high only on the dimensions of either pleasure or arousal. There are intrinsically important reasons to focus on vigor. We argue that a certain level of vigor is necessary for motivational processes in work organizations. Fredrickson's Broaden-and-Build theory argues that positive affects broaden the scope of cognition and enable flexible and creative thinking (Fredrickson et al., 2003). Empirically, recent studies, using related conceptualizations of vigor as a mood state, found it to be linked with performance (Rego & Cunha, 2008; Thelwell et al., 2007), effective decision making and pro-social behavior (George, 1991; Staw & Barsade, 1993). There is growing evidence supporting the idea that positive affects have health-promoting consequences (Pressman & Cohen, 2005).

There is also evidence which suggests that vigor may have similar effects, for example, on self-rated health (Shirom et al., 2006, in press) and on inflammation biomarkers in the blood (Shirom et al., 2006); hence, the importance of research on vigor. Additionally, individuals' level of vigor is often considered as an indicator of their optimal psychological functioning. For example, the operational definition of well-being by the World Health Organization (WHOQOL Group, 1994), used in their questionnaire, includes items like 'I feel energetic', 'I feel active', 'I feel vigorous', and 'I wake up feeling fresh', items used in part in a measure of vigor used in our past quantitative studies (e.g. Shirom et al., 2006, in press).

The current study had two main objectives. The first was to validate the above conceptualization of vigor considered as novel relative to past research on this affective state. As an affect, feeling vigorous has been included in many mood inventories, often in a cluster referred to as 'positive energy' or 'energetic arousal' (Burke et al., 1989; Thayer, 1989; Yik et al., 1999). Vigor was identified as a distinct factor and therefore was measured by a distinct scale in the Profile of Mood State (POMS; McNair et al., 1971). This POMS factor was subsequently re-validated (Cranford et al., 2006). The POMS vigor scale has been used in many studies, most frequently in the sport sciences (e.g. Terry et al., 1999). Items used in POMS to assess vigor (e.g. energetic, full of pep, vigorous) reflect the physical strength facet of vigor, as conceptualized above. The UWIST Mood Adjective Checklist (Matthews & Jones, 1990) includes a subscale of energetic arousal that contained items gauging physical strength (e.g. 'energetic', 'vigorous') and also items gauging cognitive liveliness (e.g. 'alert'). Another frequently used conceptualization of vigor views it as a component of engagement and defines it as being comprised of a high level of energy, motivation to invest effort at work, and resilience (e.g. Bakker et al., 2005; Hakanen et al., 2006).

The second objective of the study was to expand the understanding of vigor and its relations with other work-related variables, and to provide qualitative evidence of potential job-related antecedents of vigor. These objectives were achieved through a qualitative investigation. Vigor, being context-specific, results from people's evaluation of the events, objects, and situations that occur in their workplace. The realization of the causes of feeling vigorous may not be instantaneous, but sooner or later the affect itself can serve as a source of information about its antecedents and how it was precipitated. Thus, it is reasonable to assume that employees, when asked to recount a recent experience of vigor at work, will also be able to describe their understanding of its antecedents. Similar qualitative studies have investigated the nature of other positive affect states such as pleasure (Dube & Le Bel, 2003) and elation, gladness and joy (de Rivera et al., 1989).

## Method

### Sample

The sample consisted of employees undergoing routine periodic health examinations as part of a fringe-benefit package offered to them by their employer; employers offering this fringe benefit represent a cross-section of mostly large public and private organizations in Israel, where this research was conducted. While undergoing these examinations, we randomly selected – using a table of random numbers from one to ten – participants who were asked whether they would be willing to be interviewed over the phone within the next week. Additionally, we asked them for permission to access the results of their periodic health checkup. Prior to the phone interview, we excluded from the original sample participants who had self-reported – in a questionnaire that they had completed during the periodic health checkups – having been diagnosed with a cardiovascular disease or diabetes, having undergone a stroke or a mental crisis, or regularly taking anti-psychotic medications or antidepressants. The decision to exclude these potential respondents was based on previous findings suggesting that the disease or the medication could impact levels of vigor (Puetz et al., 2006). We also excluded respondents who were no longer gainfully employed (e.g. retirees or unemployed) and people who worked less than two hours a day. Following this exclusion procedure, we attempted to contact 62 study participants by phone. Eleven out of the 62 respondents could not be interviewed by phone even after repeated attempts on different days ('no answer' and 'not available for the interview' were the major reasons for their attrition); therefore, they were excluded from the study. The mean age of the remaining 51 participants was 46 ( $SD = 6.56$ ), and 71 percent were male.

### Procedure

The phone interviews took place on average three weeks after the date of the periodic health examination. They were audio-recorded with the interviewees' permission, and were subsequently transcribed for content analysis. We used an interview schedule based on a few open questions (reproduced as Appendix A) because it focuses on an overarching topic and general themes but allows the interviewer essential degrees of freedom (Lee, 1999). Following the accumulated evidence supporting the validity and reliability of phone interviews (see Sturges & Hanrahan, 2004), and past studies that indicated that the planned length of each interview – about 30 minutes – could be easily achieved using phone interviewing (Bernard, 2000), we used this method to collect our data.

The interview questions were partly deduced from our conceptualization of vigor. When interviewees described different aspects of vigor, we asked whether they were experienced together or on separate occasions. Moreover, in order to examine the proposed interrelatedness between the three factors of vigor; we enquired about the length of the experience in order to understand whether it was momentarily felt or experienced for longer periods of time. In addition, we enquired about its antecedents, expecting to identify – using an inductive approach (see Siggelkow, 2007) – job characteristics associated with vigor.

### Analysis

We analyzed each interview as a distinct unit, and related to the multiple interviews as discrete replications. We divided the interviews' analysis into two parts, in line with the two major research objectives. The analysis was conducted by one of the authors and a second, independent, rater. In the first part of the analysis, we applied the matching approach, a technique in which the prior existence of a theory or a conceptual model allows the anticipation of a particular pattern of outcomes (Lee et al., 1999). Since we had a formal theory about the three-faceted structure of the construct of vigor, the purpose of pattern matching in this part was to either find support for – or disconfirm – this structure. To achieve this, we examined each interview for the presence of words indicative of the different facets of vigor experienced by the respondent. We marked words or sentences describing felt vigor and related them to either one or more of the proposed facets of vigor: physical, cognitive or emotional. We then counted the number of vigor facets – only one, two, or three – found to co-exist in each interview.

The analysis of the data corresponding to the study's second objective was far more elaborate and complex. Specifically, we looked for personal and work-related conditions that the respondents described as enabling their experience of vigor at work. Our analysis was based on replication logic, which is a process of recursive cycling among the interview data (Eisenhardt, 1989; Eisenhardt & Graebner, 2007). In order to maintain the independence of the replication logic, each rater first read each interview and noted down the ideas that emerged from it. Only then did we proceed to search for patterns or themes that repeated themselves across the different interviews. Identifying repeating themes was done in an iterative process, in which we pursued the presence of the central themes within each interview, after which we continued to identify similar themes across the different interviews (Bernard, 2000; Miles & Huberman, 1994). The result of this process was a list of tentative propositions that were tested for falsification or

corroboration in each interview. This meant revisiting the data in order to refine and further identify the patterns that emerged from the information gathered in the interviews. After a few iterations of this process, a final list of proposed antecedents of vigor was created.

In the development of the coding protocol, we created mutually exclusive themes and categories. Still, a possible interrelatedness of some of the categories must be acknowledged. For example, many of the respondents who discussed the idea of experiencing challenging situations related only to challenging situations that they had encountered successfully. We still made a distinction between these two themes (i.e. coping with challenging situations on the job and experiencing an achieved success on a project), because each added a different value to our understanding of the causes of vigor. However, to avoid the unnecessary inflating of the number of responses, items were not coded both ways, but were ascribed to their respective themes in an attempt to represent the participants' words as faithfully as possible, and to provide the reader with the full richness offered by the subtle nuances of the descriptions.

Each event or situation described by the respondents as a cause of vigor was then coded, by each of the two independent raters, and related to one of the proposed categories of antecedents. In order to estimate the inter-rater reliability, stability of assessment across raters was calculated. The proportion of agreement between raters was 84 percent, and Cohen's kappa was .814. Once these results had been obtained, the coding discrepancies among the raters were discussed, and the definitions of the categories were revisited and further clarified. This process resolved some of the differences between the raters. After that, the proportion of agreement between raters went up to 94 percent, and Cohen's kappa was .942, suggesting high inter-rater reliability.

## **Results**

### **Descriptive results**

Out of the 51 employees included in the final sample, 13 respondents could not remember experiencing vigor at work. We first compared these employees (dubbed as the Non-Vigor, or NV group) to those who did describe experiences of vigor (dubbed the Vigor, or V group). In terms of gender, age, and work hours per day, the two groups did not differ significantly (69% and 71%, 49 and 46, and 8.0 and 8.5 for the NV versus V groups, respectively). The two groups were significantly different from each other in the percent of rank-and-file employees and in the percent of those

employed in technical occupations like engineers, technicians, and computer programmers (62% and 34%, and 15% and 42% for the NV and V groups, respectively).

### The multi-faceted structure of vigor

Our first objective was to confirm or disconfirm the suggested three-factor structure of vigor. To respond to this objective, we analyzed the detailed responses of the 38 respondents to the questions regarding their feelings of vigor, and their insights about whether these different types of vigor were intertwined and whether they appeared either simultaneously or separately. In Table 1, we provide examples of statements made by the respondents.

Seven out of the 38 descriptions of vigor did not allow us to clearly infer the facets of vigor that the respondents described because the descriptions were not elaborate enough. Out of the remaining 31, only seven respondents (23%) related to only one or two of the proposed facets of vigor. The experiences described by the remaining 24 interviewees (77%) clearly indicated the co-existence of the three expected facets of vigor (physical, emotional and cognitive vigor), thus supporting its proposed three-factor structure.

**Table 1** Reference to the co-existence of one, two or three facets of vigor

|  |  |
|--|--|
| <i>All three types of vigor appear together</i>  |  |
| 'The feeling that followed [the event described previously] was literally one of physical excitement accompanied by great clarity of mind. These two [feelings] together made me feel happy about myself, my success, and the people I work with.' |  |
| 'It [the event] made me feel energetic, creative, and clear minded; I felt positive feelings about the people around me, and a simple sense of physical energy, like strength.'  |  |
| 'When I started implementing [the plan], I felt highly focused and experienced a special sense of creativity, accompanied by a good flow with people and a general sense of physical energy.'  |  |
| 'When I feel this positive emotional energy, it is always a combination of something emotional, something physical, and something cognitive, like enhanced abilities of speech and didactics.'   |  |
| <i>Only one or two types of vigor appear at a time</i>   |  |
| 'It [the feedback] gave me emotional energy and happiness, and also had a physical effect. Sometimes the physical effect can be so strong that if I have pain, real pain of any kind, the sense of physical energy can erase it.'                  |  |
| 'Usually, there is a connection between the way they [the events] make me feel physically and the way they make me feel emotionally. When I strongly feel physically energetic, I also feel a strong sense of emotional energy.'                   |  |
| 'It makes me feel mentally enlivened, and as a result I feel emotionally enlivened as well.'   |  |



### *The length of time of feeling vigorous*

After each interviewee had described his/her experience of vigor, we asked him/her to try and recall the length of time the experience had lasted, and the events, conditions or circumstances that created or enhanced their experience of vigor. Twenty-five respondents related to the length of the experience of vigor. Out of these 25, 10 indicated that the experience had lasted a few hours (e.g. 'it lasted the whole day, until I went back home'; 'usually it doesn't last long, only a few hours'; 'sometimes it lasts for only a few minutes, or it can last a bit longer, until reality brings you down'). One interviewee indicated that the experience had lasted a few weeks (e.g. 'when it is very strong, this feeling can last even a week or two'), and 15 respondents said it had lasted a few days (e.g. 'this feeling lasted a few days and only subsided when I got back into my routine'; 'these periods [of experiencing vigor] can last a few days, even up to a week'). These varied responses provide additional support for our decision to relate to vigor as an affect because, while closer to a mood state in that it is more likely to be felt over days or weeks, it is clearly contextualized at work and is associated with specific work-related enablers (see below), thus having some attributes of an emotion.

### **Content analysis of major themes**

The second objective of our study was to identify specific events or conditions that can be regarded as direct antecedents of vigor. First, we read through all the responses and made notes on participants' words and examples in order to allow categories related to their experience of vigor at work to emerge. We listed 107 references to conditions or events that elicited vigor. Applying replication logic, we identified 17 categories in these 107 descriptions of vigor's antecedents. These categories were then grouped into wider and more general themes. We repeated this process twice, each time achieving a more consolidated and parsimonious list. This reflective process, accompanied by discussion between the two raters, resulted in a final list of seven themes, described below, that included all the identified categories.

Table 2 summarizes how often each of the 107 events and conditions, identified as evoking vigor, appeared in the responses. The most frequent causes of vigor were found to be experiencing positive interactions with others, effectively coping with challenges at work, and achieving success. Table 3 provides examples, as quotes from the interviews, for each final theme. Additionally, below we briefly describe each of the final themes and sub-themes; the parenthesized percent appearing after the theme name refers to the percent of responses that mentioned the respective theme.

**Table 2** Summary of themes

| Theme   | Number of times<br>mentioned (N = 107) <sup>a</sup> | Percentage<br>from total |
|---|---|--------------------------|
| 1. Experiencing meaningful interactions with others | 24  | 22                       |
| 2. Coping with challenging situations on the job    | 23  | 22                       |
| 3. Experiencing success achieved on a project       | 18  | 17                       |
| 4. Positive interactions with supervisor            | 14  | 13                       |
| 5. Events related to one's personal life            | 12  | 11                       |
| 6. Feeling in tune with the job                     | 11  | 10                       |
| 7. Receiving positive information at work           | 5   | 5                        |

Note: <sup>a</sup> N = number of events described by respondents.

### *Experiencing meaningful interactions with others (22%)*

Based on the qualitative data analysis, we concluded that meaningful interaction was the most frequent reason for experiencing vigor at work. Examples of items included within this theme were: warm relations with others, others demonstrating friendship and humanity, support from co-workers, appreciation from and pleasant interaction with clients/patients/the audience, cooperation with others, and good teamwork.

### *Coping with a challenging situation on the job (22%)*

This theme included items such as the need to deal with complex problems, challenging projects, unusual and varied task requirements, projects that demand creative ideas and initiative, and problems demanding creative solutions, as well as energizing projects with pressing timetables.

### *Experiencing an achieved success on a project (17%)*

We coded interviewees' responses as relating to this theme when they described special accomplishments, successful efforts, good results, or positive feedback from either the situation or from the job itself.

### *Positive interactions with supervisor (13%)*

This theme related to receiving compliments or positive feedback from supervisors, being appreciated, being treated as if the employee or his/her feelings

**Table 3** Examples of the different themes as they appear in the data

| Theme                                 | Quote  |
|---------------------------------------|--|
| Meaningful interactions               | <p>'This [vigorous] feeling doesn't necessarily have to do with my job's conditions. It is often more related to people: a warm connection, a good one, an interaction can create this feeling.'</p> <p>'When people around me are nice, when they express to me their appreciation for something I did.'</p> <p>'Behaviors of true friendship, friends that come to support you when it is needed.'</p>   |
| Challenge                             | <p>'About a week ago, my boss gave me a special project, something quite complex. I did it, and I did it well although it was complicated. It made me feel very satisfied and I felt vigorous . . .'</p> <p>'A few days ago a man came to see me. He had some very unclear symptoms and I sent him to take some tests, based on my diagnosis. The test results showed that I was right on the mark, although his situation was very unique. This challenge of solving an unusual problem, giving a correct diagnosis [creates this feeling of vigor].'</p> <p>'I had a creative idea on how to solve a major problem we had been having for a long time.'</p> <p>'Interest in the work. Just this week a new project came in and I learnt a new subject, something mentally intriguing.'</p> |
| Success                               | <p>'It happened when I was working on a project, which turned out to have a very successful result. I felt I had received very positive feedback . . . from the result of the work itself. This made me feel emotional energy and had a physical effect as well.'</p> <p>'Feeling vigorous comes from success, like when I built this program that worked properly and everyone was happy with it.'</p> <p>'When I get the end-product and see that the investment was worthwhile.'</p>  |
| Relations with supervisor             | <p>'Feeling that I am important as an employee and that my supervisors relate to me. It doesn't even matter how they reacted to me or if it changed anything fundamental, the attention itself is what is important.'</p> <p>'When the boss gives every employee the feeling that he is important to him and that his feelings are important.'</p>   |
| Events related to one's personal life | <p>'This vigorous feeling at work was distinctly a result of something I brought from home, after a restful and quiet weekend at home . . .'</p> <p>'What causes it is not something that happens at work but something that happened in the morning at home, a feeling I brought from home or good news I heard in the morning.'</p> <p>'If you dig deeper, you will find that it is all based on your character or on your basic attitude towards life: an optimist will let this feeling [of vigor] flood him more than a pessimist.'</p>   |

**Table 3** continued

| Theme                          | Quote   |
|--------------------------------|---|
| Flow with the job              | <p>'I knew I was doing something I felt secure in, something I know how to do well.'</p> <p>'... Feelings that I love what I do and I am happy with it.'</p> <p>'I realized that what I do is meaningful.'</p>  |
| Receiving positive information | <p>'It happened when I received a happy piece of news about a project that was accepted.'</p> <p>'This week, I got this [vigorous] feeling at work. It was due to a rumor I had heard, something I had been waiting for, for a long time, and I finally got it. This something "extra" created this feeling.'</p> |

are important to the supervisor and simply being acknowledged by one's supervisor.

#### *Events related to personal life (11%)*

This theme covered situations or events not directly related to work, such as coming back to work after a restful weekend, bringing an especially good feeling from home to the worksite, working out in the gym or doing other kinds of physical activity.

#### *Feeling in tune with the job (10%)*

This theme included responses that described the job as being loved, meaningful, interesting, and involving doing things that one was good at.

#### *Receiving positive information at work (5%)*

This last theme included categories like receiving pleasant news, presents, and unexpected surprises at work.

### **Vigor and the Job Characteristics Model**

The second objective of this study was to generate specific hypotheses regarding the relations between job characteristics and vigor. Consequently, we re-analyzed the interviews' contents to identify instances in which respondents referred to one of the components of the Job Characteristics Model (JCM),

namely: job significance, job identity, skill utilization/variety, job autonomy/perceived control, job significance, and feedback from one's supervisor (Hackman & Oldham, 1974, 1980). Using the pattern matching technique described above (Lee et al., 1999) we investigated the theoretical possibility of a fit between the JCM predictions and our qualitative data.

At this time, we re-read all the interviews and marked down words and sentences that specifically related to the job characteristics we wanted to identify. The relevant items were now ascribed to one of the core job characteristics described next, based on the JCM (Hackman & Oldham, 1974, 1980). Job significance describes the degree to which the job has an impact on other people, both inside and outside the work organization, or on the employing organization itself. In our original analysis, most of the events now belonging to this group were part of the theme experiencing an achieved success on a project. Forty-six percent of the events ( $n = 26$ ) we analyzed this time belonged to this category. Feedback from supervisors measures the extent to which one receives information about the effectiveness of one's efforts from one's supervisor. Twenty-seven percent of the events belonged to this category. Task identity refers to the extent to which the job is an identifiable piece of work, possible to accomplish from beginning to end. Twenty-three percent of the stories could be related to this new category of task identity. Skill utilization is the degree to which the job requires a variety of different activities, which involve the use of a number of different skills and talents on the part of the employee. We could relate only one event to this category, describing a challenging project demanding the use of the interviewee's skills (this event was originally ascribed to the coping with a challenging situation theme). We could not find any reference to task autonomy (the employee's level of discretion regarding work processes) or perceived control (ability to influence the work environment) among the items.

## **Discussion**

Positive affective states are often viewed as integral to individuals' well-being (Salovey et al., 2000) and as mediating the effects of daily experiences on well-being (Robinson, 2000). When positive affects are experienced at work, like when employees feel vigorous or enthusiastic, they have been shown to influence work-role effectiveness either directly, by increasing employees' level of motivation (Kafner & Kantrowitz, 2002), or indirectly, including by leading to heightened levels of self-efficacy (Spector & Goh, 2001). The present qualitative study focused on the affective state of vigor at work and its precursors. Our first objective was to construct validate the theoretically based three-facet

structure of vigor as comprising three interrelated, internally controlled affective components, namely one's feelings concerning one's physical strength, emotional energy, and cognitive liveliness (Shirom, 2004).

Our findings strongly support the proposed three-facet structure of vigor. Based on the content analysis of the interviews, it was clear that most employees relate to vigor as a multi-faceted variable, comprised of physical, emotional and cognitive energies. This finding replicated the results of a quantitative study, which used confirmatory factor analysis, and which supported the three-facet structure of vigor (Shirom et al., in press). As we indicated, other researchers have viewed energetic arousal or vigor as a dimension of affective experience in which a person feels capable of acting (see Quinn, 2007). The contribution of our study lies in that we were able to show, based on the perspective of active participants in the social system of work, that the phenomenon of vigor is indeed multi-faceted, comprising the physical, emotional, and cognitive facets.

The second study's objective was to explore the antecedent factors enabling employees to feel vigorous. The experiences most frequently mentioned as precursors of vigor were meaningful interactions with others, coping with a challenging situation on the job and achieving success on a project. With regard to the specific job characteristics comprising the JCM, job significance was by far the strongest characteristic enabling vigor at work. Feedback from supervisors and job identity were also strongly associated with vigor, whereas skill utilization had a very weak association and perceived control and job autonomy had no association at all with experiencing vigor. These findings suggest that a specific combination of job characteristics such as job significance coupled with job identity could be considered as a significant precursor of vigor felt at work.

We also found that experienced vigor spilled over from realms other than work to the realm of work. The spillover theory maintains that workers' experience on the job carries over into the non-work area, and vice versa (Staines, 1980). Eleven percent of the interviewees reported that events that were not directly related to the realm of work led them to feel vigorous at work. The concept of spillover has been researched mainly in the areas of burnout and exhaustion, or negative affective states (Song et al., 2008). Our finding on non-work to work spillover could serve to further direct attention to the phenomenon of spillover of positive affects from one realm of life (e.g. home) to another (e.g. work).

### Limitations and strengths

The first limitation of this research is that the sample we used – participants undergoing a periodic health examination – may not be representative of the

general population. Most of our respondents were white-collar workers with an above-average level of education, who exhibited generally good health behavior patterns: they smoked little and exercised regularly. Future attempts to replicate the findings for the less resilient strata of the general population may find that in these segments relatively higher levels of negative affects, like depression and anxiety, overshadow and eclipse the relationships between job characteristics and vigor as found in the present study (see Baumeister et al., 2001).

The study was conducted during the summer months, and the overlap of the study period with the vacation time could probably account for the non-response to our phone calls by some participants who initially had agreed to participate. Yet another limitation concerns the number of employees experiencing vigor (37) as compared to those not experiencing it (13) among our 51 respondents. As reported above, the respondents who did not experience vigor were significantly different from those experiencing vigor in that they tended to be employed in clerical or semi-skilled occupations as rank-and-file employees, whereas those experiencing vigor tended to be employed in occupations like engineering or in managerial positions. We suggest that future research on the antecedents of vigor oversample the employment strata characteristics of those not experiencing the affect of vigor. It could be that our findings on the job characteristics likely to antecede the experience of vigor are occupation- and hierarchical-level specific. For example, future research may find that for clerical or semi-skilled employees, situations or instances of job autonomy and perceived control precede feeling vigorous.

A major strength of the current study is that we excluded participants with chronic diseases and those taking antipsychotic medications or antidepressants and other types of drugs known to affect the levels of vigor and job satisfaction from the sample. Not excluding these participants is likely to have been an important confounder in past studies that did not employ this practice, as it has been shown that chronic disease affects individuals' attitudes and feelings (Suls & Bunde, 2005).

### **Future research**

Prospective studies would benefit from testing our major findings using quantitative methods for additional support. Future research can further investigate the personal and occupational variables related to or responsible for the probability of experiencing vigor at work. Future research might also wish to look into the possibility that the type of job held and one's occupational characteristics could determine 'objective' exposure to vigor-arousing situations or circumstances.

Some indication was found for a spillover effect of vigor between the work and the home domain. Since employees' experiences at home may be carried over into the realm of work, antecedents and correlates of the experience of vigor at home can also be studied. In a similar manner, though not indicated in this study, another area for future research relates to the phenomenon of crossover, describing a situation in which vigor, experienced in the workplace by the employee, leads to vigor being experienced at home by the employee's spouse (Westman, 2001; Westman & Etzion, 1995). Additionally, though this possibility did not come up in any of the interviews reported here, the role of group-level social processes, such as emotional contagion, as antecedents of experienced vigor could be a fruitful area of inquiry.

Several findings reported above, when considered simultaneously, could suggest promising avenues for future research. For example, one of the themes identified in the theme analysis (Table 3) was relations with the supervisor. This item generated twice the number of events relative to the more specific job characteristic of feedback from the supervisor, which was analyzed in relation to the JCM. This suggests that receiving positive feedback from one's supervisor represents only one type of vigor-eliciting employee-supervisor interaction. Another example can be found in the theme meaningful interactions with others. From the descriptions of the events categorized under this theme, it is evident that different types of social support from others, often used as a measure covering the most meaningful interactions with others at work, represent only a minority of the different positive interactions that elicited vigorous feelings at work for our respondents. Future research can delve more specifically into these affect-eliciting events.

We would like to suggest some practical implications of our study. In the introductory section, we referred to past studies that found that employees' vigor favorably impacted their self-reported health and could be favorably implicated in their job performance (e.g. Shirom et al., in press). The Broaden-and-Build model described above argues that positive emotions have the potential of building individuals' personal resources and thereby enabling them to better cope with work-related demands and situations (Fredrickson, 2001; Fredrickson et al., 2003). Based on past theory and accumulated evidence, we propose that interventions designed to increase vigor could lead to favorable individual and organizational outcomes. In this context, our findings suggest that practitioners may consider implementing job redesign modules, which increase task significance, task identity, possibilities for experiencing meaningful interactions with others at work, and possibilities for being involved in challenging projects.



The use of qualitative methodology in research on affect in organizations has been repeatedly recommended. The present research embraced this challenge. The results are indicative of the potential contribution of qualitative research to advance our understanding of the structure and antecedents of vigor. If replicated in quantitative, preferably longitudinal studies, and in more representative samples, the findings of this research may have important implications with regard to our understanding of the role of affect in the workplace, and to worksite interventions that can buttress employees' experiences of vigor at work.

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## Appendix A: The interview schedule

My name is \_\_\_\_ and I am calling you as a follow up on the medical examination you went through a few weeks ago at the Center of Periodic Health Examination.

After inquiring after the person's well-being and asking for a few minutes of his/her time, we asked:

In the last 3–4 weeks or so, did you feel vigorous at work?

If the interviewees replied in the negative, we tried to prompt them by rephrasing the question and asking whether they had had any kind of energetic feeling at work lately. If they insisted on not remembering any such feeling or were unable to elaborate on it or describe it, the interview ended at this point. If they replied in the affirmative, we asked:

Could you please elaborate on this feeling: what exactly did you feel?

At this point, the interviewees were given time to fully describe their experience, without interference or any limiting guidelines. When needed, we asked for further explanation or elaboration. If several aspects of vigor were mentioned, we asked:

To what extent did the feelings you described [I briefly repeated the description] appear together, at the same time?

After the interviewee finished describing his/her experience(s) of vigor, we asked him/her a few questions about each experience:

How long did the experience last?

What were the circumstances, conditions or events that caused this feeling?

Since understanding and identifying causes of vigor was one of the objectives of the interviews, at this point the interviewees were again given as much time as needed to fully describe their perception of what caused their experience of vigor at work. Again, clarifications and elaborations were asked for whenever needed, but the probes were general and non-directive. Unless another subject came up, this was the end of the interview. We thanked the interviewees for their time and answered any questions they had regarding the research we were conducting.

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