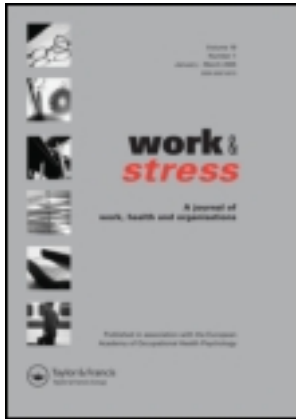


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Does self-efficacy matter for burnout and sickness absenteeism? The mediating role of demands and resources at the individual and team levels

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In team-based organizations, team members may share similar experiences, feelings and, consequently, susceptibility to burnout. This study explores the burnout process beyond the individual level of analysis and integrates Social Cognitive Theory (SCT) with the Job Demands-Resources Model (JD-R), emphasizing the role of self-efficacy in shaping the meaning that people ascribe to situations. A multilevel structural equation model was tested in which it was predicted that work self-efficacy beliefs would be associated with burnout both directly and indirectly via job demands and job resources, and at both the individual and the team level. Moreover, it was posited that, at the team level, registered sickness absences are predicted by burnout. A sample of 5406 call centre operators, clustered in 186 teams working in the same large Italian company, filled out a questionnaire, whereas team absence rates were provided by the company's HR department. The findings largely supported the hypothesized model: at both levels, job demands and job resources partially mediated the relationship between self-efficacy and burnout. Moreover, at the team level, burnout predicted subsequent sickness absenteeism. In addition, individual-level burnout was primarily associated with job demands, whereas team-level burnout was primarily associated with a lack of team-level resources.

Keywords: burnout; sickness absenteeism; self-efficacy; individual and team level; teams; call centre; work-related stress

Introduction

Burnout is an occupational hazard related to a number of individual and organizational costs, such as sickness and absenteeism (e.g. Darr & Johns, 2008; Schaufeli, Bakker, & Van Rhenen, 2009). Traditionally, the literature has emphasized the role of perceived work characteristics as antecedents of burnout, whereas less attention has been given to the contribution of individual factors to the burnout process (Maslach, Schaufeli, & Leiter, 2001). Recent studies, however, have underlined the role of personality factors, such as self-efficacy, as potential antecedents of burnout (Alarcon, Eschelman, & Bowling, 2009). The present contribution expands this line of research and has five innovative features.

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First, it combines a well-validated occupational health model, the Job Demands-Resources Model (JD-R, Demerouti, Bakker, Nachreiner, & Schaufeli, 2001), with Social Cognitive Theory (SCT, Bandura, 1986) in order to understand the burnout process, thereby emphasizing the active role of the individual in shaping his or her work environment. According to SCT, work self-efficacy beliefs influence not only affect and behaviour, but also the way in which situational opportunities and threats are perceived. Following this lead, we explore how and to what extent work self-efficacy is related to burnout through the perceptions of job characteristics; i.e. job demands and job resources.

Second, the current study is an investigation at the individual and team level of analysis, simultaneously. Even though the great majority of burnout studies have adopted an individual-level approach, there is some evidence that burnout is partly shared among team members and affected by team-level characteristics, such as shared perceptions of the work environment (Van Yperen & Snijders, 2000). Our study focuses on individuals nested in work teams and aims to disentangle individual and team-level effects.

Third, we test how and to what extent burnout at the team level predicts the sickness absenteeism rate of the work team. There is evidence that absence behaviours among team members are strongly interrelated since individuals adjust their behaviours according to norms, attitudes and behaviours that prevail in their work team (Markham & McKee, 1995). In our research we used organizational records of sickness absence of each team.

The fourth innovative aspect of our study is related to the methodological approach to multilevel data (individuals nested in teams), namely the use of Multilevel Structural Equation Modeling (MSEM, Muthén, 1994). Compared with the standard Multilevel Linear Regression Modeling (MLM, Raudenbush & Bryk, 2002) this approach makes it possible to perform multilevel models with latent variables and outcomes at the team level (i.e. team absenteeism), and to perform multilevel mediation with unbiased indirect effects, both at the within (individual) and between (team) level (Preacher, Zyphur, & Zhang, 2010).

Lastly, the study takes place within a large customer relationship management company, focusing on one of the fastest growing occupations, namely call centre operators, a stressful job with high levels of absenteeism (Schalk & Van Rijkevorsel, 2007). Despite the extensive literature on burnout in call centres, to our knowledge no studies have focused on its relationship with registered team-level absenteeism.

From self-efficacy to job demands and job resources

Self-efficacy refers to the belief in one's ability to master specific domains in order to produce given attainments (Bandura, 1986, 2000). In the work setting, work self-efficacy differs from the dimension of professional efficacy, which is part of the burnout concept. Work self-efficacy beliefs are context-specific since they are related to the activities that the individual is required to perform, and they can be considered an important antecedent of organizational behaviour and job performance (Stajkovic & Luthans, 1998). Professional efficacy, on the other hand, refers to a general evaluation of the effectiveness and accomplishment derived from the performance itself. Consistent with the triadic reciprocal causation between person, behaviour and organization (Bandura, 1986), people are both products and producers of their

environment. In these dynamic transactions self-efficacy plays an important role by leading people to adopt a “control over circumstances mindset”.

According to SCT, self-efficacy makes a difference not only to how people feel and act, but also to how they actively shape the meaning ascribed to situational characteristics (Bandura, 2000). This proactive role of self-efficacy may trigger the cognitive representation of the situation, emphasizing the aspects that better fit with the individual’s expectations and psychological state (Mohammed & Billings, 2002). Experimental research has attested that self-efficacy increases the perceptions of situational opportunities and decreases the perceptions of situational threats (Mohammed & Billings, 2002). Recent organizational studies have provided evidence that work self-efficacy beliefs are associated with a more positive perception of the main social components of the work environment, namely the direct supervisor, colleagues, and top management (e.g. Borgogni, Dello Russo, Petitta, & Vecchione, 2010). From a slightly different perspective, Judge, Bono, and Locke (2000) found that individuals with higher positive core-self evaluations (a higher order construct that includes self-efficacy) had a more positive perception of job characteristics.

This social cognitive approach may also be applied to the JD-R model (Demerouti et al., 2001), representing an overall theoretical framework used to describe the main aspects of the work environment which are relevant for employee well-being. This model identifies two specific sets of job characteristics that can be found in every organizational context: job demands and job resources. Job demands are the physical, social or organizational aspects of the job that require sustained physical and psychological effort. Job resources are the physical, social or organizational aspects that may reduce job demands and are functional in achieving goals and stimulate learning and development.

The JD-R model deals with perceived demands and resources. The current study assumes that work self-efficacy lies at the core of these perceptions. In contrast to Xanthopoulou, Bakker, Demerouti, and Schaufeli (2007), which posited a mediating role of self-efficacy between job characteristics and burnout/engagement, we hypothesized self-efficacy as a putative antecedent of perceived job demands and job resources. More specifically, we claim that call centre operators who are high in self-efficacy, in an attempt to exert control over their job, proactively seek out job resources that are beneficial for them. In a similar way, they are more likely to interpret job demands as feasible challenges, by actively finding ways to manage job obstacles and difficulties (Salanova, Schaufeli, Xanthopoulou, & Bakker, 2010). Consistent with these assumptions, we test the following hypotheses at the individual level:

H1a: Self-efficacy will be negatively related to the perception of job demands.

H1b: Self-efficacy will be positively related to the perception of job resources.

The burnout syndrome

Job burnout is conceived as a chronic stress syndrome whose main dimensions are exhaustion and cynicism, which represent its energetic and motivational components, respectively (Schaufeli & Taris, 2005). Accordingly, we did not consider the third original burnout component, namely lack of professional efficacy, because of its weak correlation with cynicism and exhaustion and because doubts have been

raised as to whether it represents a constituting element of burnout (Schaufeli & Taris, 2005).

In the present study, along with exhaustion and cynicism, we included a new dimension related to burnout, namely Interpersonal Strain. This is defined as the feeling of discomfort and disengagement in relationships with people at work resulting from excessive social requests and pressures (Borgogni, Consiglio, Alessandri, & Schaufeli, 2012). This dimension has been recently proposed in order to recapture the original interpersonal meaning of burnout, which was lost in the general version of the Maslach Burnout Inventory, when depersonalization (the uncaring response towards patients) was replaced by a more general and non-social dimension, namely cynicism (Schaufeli, Leiter, Maslach, & Jackson, 1996). Interpersonal strain, which applies to all relevant interpersonal relationships at work, seems to be of particular relevance in call centre settings, where interactions with others (e.g. not only customers but also team members) constitute a major part of the work tasks, and may represent a significant source of psychological distress in itself (Borgogni et al., 2012).

Job demands and job resources in a call centre setting

Research with the JD-R model shows convincingly that high job demands and lack of job resources are associated with burnout, whereby the relationship with resources is generally weaker than with job demands (for a review, see Schaufeli & Taris, in press). Since every occupation may have its own specific set of working conditions that might generate burnout, which are the specific demands and resources capable to generate burnout among call centre operators? Within a call centre, operators perform a telephone and computer-mediated job that requires following prescribed routines, under high time pressure and tight control (Zapf, Isic, Bechtoldt, & Blau, 2003). From the literature, we know that time pressure, monotony and the quality of interactions with customers (e.g. Zapf et al., 2003) may have a negative impact on the operator's well-being. Among resources contributing to well-being, research has attested the role of social support, supervisory feedback and available information that is conducive to job control (e.g. Bakker, Demerouti, & Schaufeli, 2003b). Therefore, in the present study we included as job demands monotony, customer contact and time pressure. As job resources we included team leader support, support from team members and appropriate available information. Based on the JD-R model, we test the following hypotheses at the individual level:

H2a: Job demands will be positively associated with burnout.

H2b: Job resources will be negatively associated with burnout.

From self-efficacy to burnout through job demands and job resources

It is known that high self-efficacy predicts better adjustment to one's environment, with lower levels of strain and burnout across various professions (Bandura, 2000). Therefore we assume that self-efficacious employees will be less affected by burnout (Alarcon et al., 2009).

In our study we assume that work self-efficacy is also indirectly related to job burnout. Self-efficacious employees are protected from burning out not only because they cope better with the negative emotions generated by the work itself, but also because they “construe”, or shape their work environment, and interact differently with it. It is through their ability to capitalize on the opportunities for personal growth (resources) and to be challenged by obstacles requiring effort (demands), that they are less susceptible to burnout. Thus, the present study combines the “agentic” perspective of social cognitive theory (Bandura, 2000) with the principle from the JD-R model that demands and resources are related to burnout. Hence, we test the following hypotheses at the individual level:

H3: Self-efficacy will be negatively related to burnout.

H4: Job demands and job resources will partially mediate the relationship between self-efficacy and burnout.

Does the team make the difference? Exploring team-level relationships

Recent organizational research shows that employees working in the same team tend to share perceptions, beliefs, moods and behavioural patterns (Salanova, Llorens, & Schaufeli, 2011). Moreover, group-level job characteristics have been shown to affect individual burnout levels. That means that shared feelings of burnout among team members can be explained either in terms of similar responses to the same working conditions (Van Yperen & Snijders, 2000) or as the result of a process of emotional contagion (Bakker, van Emmerik, & Euwema, 2006). Bakker et al. (2006) demonstrated that burnout may spread among team members (controlling for the effect of working conditions), resulting in a collective negative mood.

Self-efficacy, also, tends to cluster in teams, since self-beliefs are related to the interactive dynamics operating within the group (Myers, Feltz, & Short, 2004). For instance, through social modelling, competent operators may convey knowledge, skills and strategies when managing demands, thus fostering their beliefs in their own abilities (Bandura, 2000). Moreover, observers evaluate themselves through comparison with others who are similar. Observing others' success or failure is likely to influence a person's self-efficacy. Therefore, social modelling may have a negative, as well as positive influence on self-efficacy, so that self-efficacy levels are also partly shared among team members (Myers et al., 2004).

In a customer contact setting such as a call centre, even though certain activities are performed by the operators individually, the job is basically team-based. Team members work for the same business clients and perform similar activities under the same team leader. Moreover, since operators are expected to manage and control their emotions, as well as exchange information about clients, this setting is likely to foster shared emotions and knowledge among team members (Mulholland, 2002). Therefore, within the context of call centres, the team represents a meaningful level of analysis in which operators are structurally, psychologically and socially embedded.

Given the relevance of team processes for employee health and wellbeing (Bliese & Jex, 2002; Bakker et al., 2006), we posit that in call centres efficacy beliefs, perceived working conditions, and feelings of burnout are to some extent shared by team members. In fact, it is reasonable to assume that individuals who belong to the same

team tend to develop greater similarity in their appraisals of efficacy levels, job demands and job resources and to have more comparable levels of job burnout than do individuals working in different teams.

In the present study, we adopted a multilevel approach (MSEM) that is able to distinguish effects pertinent to the team level, from those pertinent to the individual level. This was done by partitioning the variance in two latent components, namely a between-clusters (or team level), and a within-cluster (or individual level) component, allowing an unbiased estimate of structural parameters at the between and within level, respectively (Preacher et al., 2010). Assuming that all variables of interest have within-group and between-group variances, a structural equation model can be estimated simultaneously at the two levels. Unlike the other studied variables, self-efficacy, being a self-referential measure, inherently focuses on the individual. At the team level, it refers to the mean level of self-efficacy within the team and should not be confused with collective efficacy (Bandura, 1986), which is a group-referential measure (Preacher et al., 2010). Thus, the similarities and differences in the underlying processes can be unravelled.

We aim to explore to what extent team-level self-efficacy and team-level perceptions of work characteristics (demands and resources) may explain team-level differences in burnout. We assume that the higher the mean level of self-efficacy within a team, the lower the perception of shared job demands, and the higher the perception of shared job resources. Moreover, we posit that teams with higher job demands and lower job resources will exhibit higher levels of burnout. Hence, we test the following hypotheses at the team level:

H5a: Team-level self-efficacy will be negatively related to team level job demands.

H5b: Team-level self-efficacy will be positively related to team level job resources.

H6a: Team-level job demands will be positively associated with team level burnout.

H6b: Team-level job resources will be negatively associated with team level burnout.

H7: Team-level self-efficacy will be negatively related to team level burnout.

H8: Team-level job demands and job resources will partially mediate the relationship between team-level self-efficacy and team-level burnout.

From burnout to sickness absenteeism at the team level

Sickness absenteeism, defined as failing to report for scheduled work because of sickness, is a complex phenomenon influenced by various social, organizational and personal factors (Darr & Johns, 2008). Despite the fact that the majority of studies have approached sickness absence as an individual phenomenon, there has been an increasing interest in absenteeism conceptualized as a team-level construct (Heywood, Jirjahn, & Wei, 2008; Markham & McKee, 1995). Since team members share the same social and physical context, they tend to adjust their behaviours according to expectations and behaviours that are accepted in their work group (Markham & McKee, 1995). A recent longitudinal study (Hausknecht, Hiller, & Vance, 2008) found that shared job attitudes predicted work-unit absenteeism. Specifically, call centre HR departments and managers are concerned about sickness

absence in teams, since this is associated with a number of key performance indicators (e.g. contacts per hour, customers' average waiting time). Moreover, from a methodological perspective, aggregating absence data at the team level may help to overcome problems related to non-normality and skewness, which are typical for the distribution of absence data at the individual level (Hausknecht et al., 2008). Therefore, investigating the potential antecedents of team absenteeism is relevant for theoretical, practical, and methodological reasons.

Previous research using the JD-R model has shown that burnout predicts sickness absenteeism among different types of professionals (Bakker, Demerouti, De Boer, & Schaufeli, 2003a; Schaufeli et al., 2009), including call centre agents (Bakker et al., 2003b). Since burnout may cross over among team members (Bakker et al., 2006), we posit that teams with higher burnout levels are likely to have subsequent higher sickness absence rates. Hence, we test the following hypothesis at the team level:

H9: Team level burnout will positively predict team level absenteeism.

Figure 1 summarizes the general model tested in our study.

Method

Participants and procedure

The study, conducted in Italy in 2010, involved 5407 call centre agents (79% response rate) from one of the larger European companies of outsourcing customer relationship management services. The company provides inbound and outbound call centre services, both for private and public organizations operating in different business sectors (such as telecommunication, ICT, energy and transport). Each participant received a letter that briefly described the research project, and filled out an

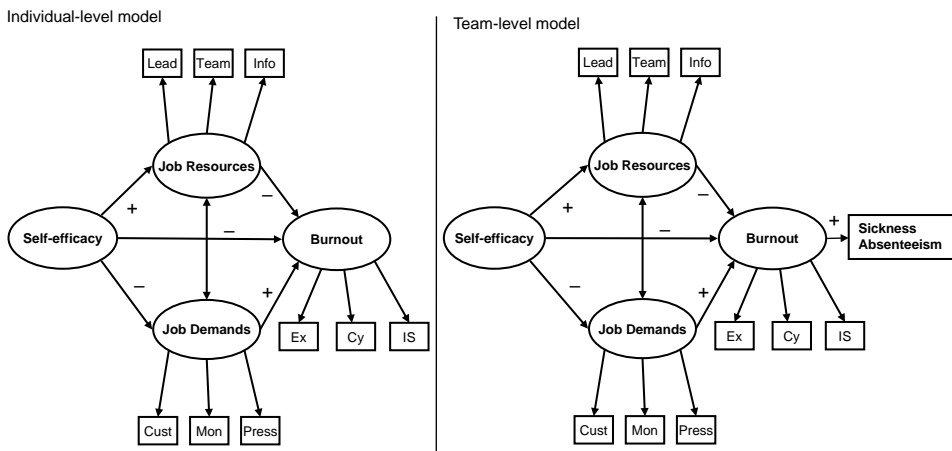


Figure 1. The hypothesized model.

Notes: Lead = team leader support; Team = team support; Info = available information; Cust = customer contact; Mon = monotony; Press = time pressure; Ex = exhaustion; Cy = cynicism; IS = interpersonal strain.

anonymous paper-and-pencil questionnaire. Participants (69% females) were from ages 18–25 years (10%) to over 46 years (7%), with the modal age group from 26–35 years (54%). About 78% of the sample had completed high school, while 22% had a university degree. About 46% had between 3 and 5 years of organizational tenure, while 95% worked in an inbound service. The data are hierarchical in nature, with individual-level measures nested within 186 different teams, with a mean team sample size of 28 ($SD = 25.45$).

Measures

Work self-efficacy. Consistent with Bandura's recommendations (Bandura, 2006), eight open-ended interviews with call centre operators were conducted in order to identify challenges or impediments that characterize their work. We then developed a nine-item tailored scale to assess the self-efficacy beliefs related to the particular set of activities that the call centre operators have to perform, rated on a seven-point response scale, ranging from 1 = *strongly disagree* to 7 = *strongly agree*. The items in this new scale are as follows: *In my job I am always able to:* Control my anxiety even when I'm particularly under pressure; Not lose heart after a very negative feedback; Prevent myself from being influenced by emotional changes; Face any provocation, even when it affects me personally; Carry on a repetitive task without losing attention; Perform well even when I'm particularly pressured for time; Detach myself from any distraction or interference when I'm focused on a customer's problem; Satisfy the needs of all customers, even the most demanding ones; Manage even the most angry costumers effectively.

A Confirmatory Factor Analysis (CFA) was performed on all self-efficacy items, using an estimation procedure that takes into account the dependence of call centre employees' data within work teams (for details, see Stapleton, 2006). This procedure (also used for all the subsequent Confirmatory Factor Analyses) produces correct parameter estimates by means of *Mplus* 4.01 program. The one-factor model showed an adequate fit to the data $\chi^2(27) = 618.570$, $p < .001$, CFI = .920, and RMSEA = .065 (see *Statistical Analysis* section for more details about model evaluation). The factor loadings were all high and significant, ranging from .45 to .70.

Job burnout. Burnout was operationalized and measured using its two core dimensions, exhaustion and cynicism (Schaufeli & Taris, 2005), as well as interpersonal strain (Borgogni et al., 2012). *Exhaustion* and *Cynicism* were assessed with the Italian Version (Borgogni, Galati, Petitta, & Centro Formazione Schweitzer, 2005) of the Maslach Burnout Inventory – General Survey (MBI-GS, Schaufeli et al., 1996). *Exhaustion* was measured with five items (e.g. "I feel emotionally drained from my work"), as well as *Cynicism* (e.g. "I have become less interested in my work since I started this job"). One cynicism item ("I just want to do my job and not be bothered") was excluded from the analysis, due to its ambiguous content. *Interpersonal strain.* Interpersonal strain (Borgogni et al., 2012) was measured with six items of the Interpersonal Strain at Work scale (ISW; e.g. "At work I find myself to be insensitive to other people's problems"). All three burnout scales were rated on a seven-point frequency scale (ranging from 0 = *never* to 6 = *daily*). The hypothesized three-factor fitted the data adequately: $\chi^2(87) = 1974.431$, $p < .001$, CFI =

.933, and RMSEA = .068. The loadings were all high and significant, ranging from .55 to .81.

Job demands and job resources. On the basis of two focus groups and consistent with the JD-R model, we developed a tailor-made pool of items for call centres. *Job demands* comprised: (1) *Monotony* (three items, e.g. “My job is often repetitive”); (2) *Customer contact* (three items, e.g. “Customers are often impolite with the agent without reason”); (3) *Time pressure* (three items, e.g. “In my job I constantly feel the time pressure”). *Job resources* comprised: (1) *Team leader support* (six items, e.g. “My team leader takes care of my professional development”); (2) *Team support* (five items, e.g. “In my team there is a strong team spirit”); (3) *Available information* (three items, e.g. “I always have all the information necessary to perform my job well”). All items were rated on a seven-point scale ranging from 1 = *strongly disagree* to 7 = *strongly agree*. The full list of job demands and resources items can be obtained from the corresponding author on request.

Confirmative Factor Analysis (CFA) revealed an adequate fit to the data for the second-order model, including the two correlated latent factors of job demands and job resources: $\chi^2(202) = 2316.672$, $p < .001$, CFI = .930, and RMSEA = .047. The item loadings were all significant and ranged from .42 to .87, whereas the second-order loadings ranged from .60 to .87.

The alpha coefficients for all scales at the individual and team level of analysis are shown on the main diagonal of Table 1. Although the internal consistency of the job demands scales seems somewhat low at the individual level (due to the small number of items), this did not represent a problem, since we employed structural equation modelling with a correction for unreliability of variables.

Team-level sickness absenteeism. The measure of team sickness absenteeism was obtained from the company’s database containing all sickness absence records for each of the 186 teams over a period of eight months, starting a month after the questionnaire was administered. The ratio between the total number of hours for sick leave and the number of hours hypothetically deliverable by the team (excluding other allowed absences from work, such as vacations, permits and maternity leave) was multiplied by 100. A mean rate of sickness absenteeism for each team was calculated. This index showed a reasonably normal distribution (skewness .80, kurtosis 1.05), and a consistent variability across groups with a mean of 5.20 ± 2.50 days.

Statistical analysis

Modelling strategies. The data gathered in this study had a multilevel or hierarchical structure with employees nested within their respective teams. Multilevel structural equation models decompose the variability into two latent components, a within-unit (i.e. individual-level variability) and a between-unit (i.e. team-level variability) component (Lüdtke et al., 2008). In particular, using the approach developed by Muthén (1994), a two-level structural equation model may be specified. At the first level, this model addresses the variability within teams and considers employees as the basic unit of analysis. At the second level this model addresses the variability between teams and considers teams as the basic unit of analysis. The flexibility of the

Table 1. Reliabilities and correlations among the variables.

	1	2	3	4	5	6	7	8	9	10	11
1. Sickness absenteeism	–	–.51**	.09	–.23**	–.44**	.14*	.16*	.20**	.52**	.33**	.62**
2. Self-efficacy	–	.82 (.86)	.31**	.48**	.70**	–.27**	.05	–.42**	–.70**	–.52**	–.71**
3. Team leader support	–	.35**	.89 (.96)	.67**	.60**	–.04	.01	.08	–.22**	–.58**	–.34**
4. Team support	–	.35**	.50**	.83 (.89)	.59**	–.13*	–.07	.06	–.47**	–.71**	–.58**
5. Available information	–	.40**	.62**	.47**	.79 (.90)	–.26**	–.10*	–.21**	–.70**	–.76**	–.81**
6. Customer contact	–	–.19**	–.23**	–.21**	–.30**	.60 (.69)	.57**	.45**	.43**	.49**	.50**
7. Monotony	–	–.04	–.10*	–.06*	–.12**	.12**	.60 (.68)	.02	.34**	.45**	.48**
8. Time pressure	–	–.12**	–.21**	–.15**	–.30**	.14**	.25**	.63 (.80)	.41**	.11*	.25**
9. Exhaustion	–	–.33**	–.31**	–.25**	–.34**	.22**	.31**	.34**	.90 (.94)	.77**	.86**
10. Interpersonal strain	–	–.36**	–.31**	–.37**	–.29**	.19**	.20**	.17**	.48**	.81 (.82)	.84**
11. Cynicism	–	–.36**	–.38**	–.32**	–.41**	.22**	.32**	.28**	.66**	.62**	.86 (.92)

Note: Correlations below the diagonal are based on individual-level data and correlations above the diagonal are based on team-level data. Coefficient alpha reliability estimates are presented along the diagonal; the estimate on the left is based on individual-level data (*within* level) and the estimate on the right is based on group-level data (*between* level). At the *within* level, N varies from 5222 to 5241 due to missing data. At the *between* level, $N = 186$. ** $p < .01$; * $p < .05$.

MSEM approach allows increased precision in assessing complex mediation models, implying both mediated and direct effects at the between, and the within, level of analysis (Preacher et al., 2010), and may include also variables measured at only one level of analysis, such as team level absenteeism.

Analysis of “multilevelness”. In implementing our multilevel analysis, we followed standard procedures (Preacher et al., 2010). First, we determined the extent of between-unit variance in all variables (except, of course, group level absenteeism) by computing Type I intraclass correlation coefficients (ICCs). The ICC represents a measure of group homogeneity (i.e. the average correlation among variables measured from individuals of the same group). The ICC represents the proportion of variance among groups or the variance explained by the grouping structure in multilevel data. In our data (see Table 2), the ICC of the variables ranged from .03 (self-efficacy) to .22 (team leader support), with an average of .10 ($SD = .06$). According to the standards adopted by other researchers (e.g. Hox, 2002), this value can be considered as an index of a moderate–high grouping effect.

We also computed the Design Effect Index (DEF; Muthén & Satorra, 1995), in order to better understand the bias introduced by the nested structure of the data on parameter estimation. The DEF is a function of average cluster size and intraclass correlation: the larger the intraclass correlation, the larger the deviation from the assumption of independence between observations and the larger the distortion of conventional inference procedures (Muthén & Satorra, 1995). In general, the rule of thumb suggests that a DEF greater than 2 is considered as indicative that the clustering of data needs to be taken into account during estimation. In our data (see Table 2), values of the DEF were larger than 2 in almost all cases ($M_{def} = 3.83$; $sd_{def} = 1.73$) and approached this value in two cases (i.e. individual’s perceived self-efficacy and worker’s subjective level of interpersonal strain). This suggests a non-negligible effect of nesting on the observed data.

Table 2. Descriptive statistics for the study variables.

	<i>M</i>		<i>SD</i>		ICC	$r_{WG(J)}$	DEF
	<i>Within</i>	<i>Between</i>	<i>Within</i>	<i>Between</i>			
1. Sickness absenteeism	–	5.20	–	2.05	–	–	–
2. Self-efficacy	5.10	5.11	0.86	.28	.03	.92	1.82
3. Team leader support	4.89	4.91	1.34	.74	.22	.81	6.98
4. Team support	4.81	4.83	1.07	.47	.10	.81	3.72
5. Available information	4.27	4.28	1.25	.56	.13	.75	4.53
6. Customer contact	3.60	3.59	1.11	.42	.08	.68	3.17
7. Monotony	5.21	5.18	1.08	.42	.10	.77	3.72
8. Time pressure	4.53	4.60	1.34	.67	.20	.72	6.43
9. Exhaustion	2.70	2.77	1.60	.65	.08	.83	3.17
10. Interpersonal strain	1.11	1.10	1.06	.34	.03	.86	1.82
11. Cynicism	1.95	1.92	1.68	.67	.07	.80	2.90

Note: Means (*M*) and standard deviations (*SD*) based on individual-level data (*Within* level; *N* varies from 5222 to 5241 due to missing data) and on group-level data (*Between* level; *N* = 186). ICC = Intraclass coefficient; $r_{WG(J)}$ = within-group inter-rater agreement; DEF = Design Effect Index.

In addition to the ICC and the DEF, the $r_{WG(J)}$ statistic (the within-group inter-rater agreement) was computed for each unit using a uniform null distribution. This statistic evaluates whether the level of agreement within each group (*within* level), is sufficient to justify their aggregation at the group level (*between* level). The resulting level of agreement was evaluated using LeBreton and Senter's (2008) revised standards for interpreting inter-rater agreement estimates (assuming .70 as the cutoff value). All variables revealed a median $r_{WG(J)}$ higher than .70 (see Table 2), supporting their inclusion at the group (*between*) level.

Structural equation analyses. For estimating the hypothesized models and for handling missing data, we used Full Information Maximum Likelihood as implemented in *Mplus* 4.01. Model fit was assessed according to the following criteria: χ^2 likelihood ratio statistic, Comparative Fit Index (CFI), and the Root Mean Square Error of Approximation (RMSEA). The critical value of chi-square is sensitive to large sample sizes and easily produces a statistically significant result (Kline, 2008). We accepted CFI values greater than .90 and RMSEA values lower than .08. We also used Akaike's Information Index (AIC) for comparing the fit of alternative, non-nested models. The lower the AIC index, the better the goodness of fit.

Mediated effects were calculated using the procedures outlined by Taylor, McKinnon, and Tein (2008). The critical values for the upper and lower confidence limits for indirect effect associated with two-variable paths (CI_{asy}), were calculated on the basis of the product of two random variables from the program *PRODCLIN2* (MacKinnon, Fritz, Williams, & Lockwood, 2007). The critical values for the upper and lower confidence limits ($CI_{100boot}$) for indirect effects associated with three-variable paths were calculated using the bias-corrected bootstrap method with 100 bootstrap runs. This method offers the best power, confidence intervals placement and overall Type I error, also for complex models in which more than one mediator is included (Taylor et al., 2008). Since the software *Mplus* 4.01 doesn't offer bootstrapped estimates for multilevel models, bootstrapped samples were built by routinely sampling n_j workers with replacements from each of the $J = 191$ groups, where n_j was fixed to the lowest number of workers for group *minus* 1 (i.e. 10).

Results

Test of the research model

Before specifying the hypothesized relations among the study variables, we estimated a measurement model in which all variables within each level were allowed to correlate with one another. In this model: (1) self-efficacy was posited by a latent variable loaded by a single indicator, by fixing its loading to 1, and estimating error terms from reliability (Kline, 2008); (2) job demands were posited as a latent variable loaded by three variables representing customer contact, monotony, and time pressure; (3) job resources were posited as a latent variable loaded by three variables representing team leader support, team support and available information; (4) burnout was posited as a latent variable loaded by exhaustion, cynicism and interpersonal strain. At the between level, an observed variable representing team-level absenteeism was added.

This measurement model fitted the data well: $\chi^2(66) = 1127.56, p < .001, CFI = .93, RMSEA = .055$.

In step two, according to our hypotheses, we specified the hypothesized multilevel structural equation model (see Figure 1). In particular, at the individual level (or “within” level) self-efficacy beliefs were specified as being related to: (1) a lower perception of job demands; (2) a higher perception of job resources; and (3) a lower level of job burnout. Job demands and job resources (posited as correlated variables), in turn, were related to job burnout. At the team level (or the “between” level), we maintained previous specified relations, but added the link between job burnout and sickness absenteeism. This model, depicted in Figure 2, fitted the data well: $\chi^2(69) = 1136.47, p < .001, CFI = .933, RMSEA = .054, AIC = 154270.96$.

Below, we describe our results from the multilevel model. For the purpose of clarity, the individual (within-group) and the team (between-groups) parts of the model are described separately.

Individual level. As expected, perceived self-efficacy was associated positively with job resources (*H1b*), and negatively with job demands (*H1a*). In turn, job demands were positively associated to job burnout (*H2a*) while job resources were negatively associated with burnout (*H2b*). Furthermore, job demands were negatively related to job resources. Self-efficacy and burnout were also negatively related (*H3*). Job resources $\beta = -.04$ ($CI_{asy} = \text{from } -.01 \text{ to } -.08$), and job demands $\beta = -.17$ ($CI_{asy} = \text{from } -.14 \text{ to } -.21$) partially mediated the relationship between self-efficacy and burnout (*H4*). Specifically, the mediating paths accounted for 48% of the relation between self-efficacy and burnout. All in all, at the individual level all hypotheses were confirmed.

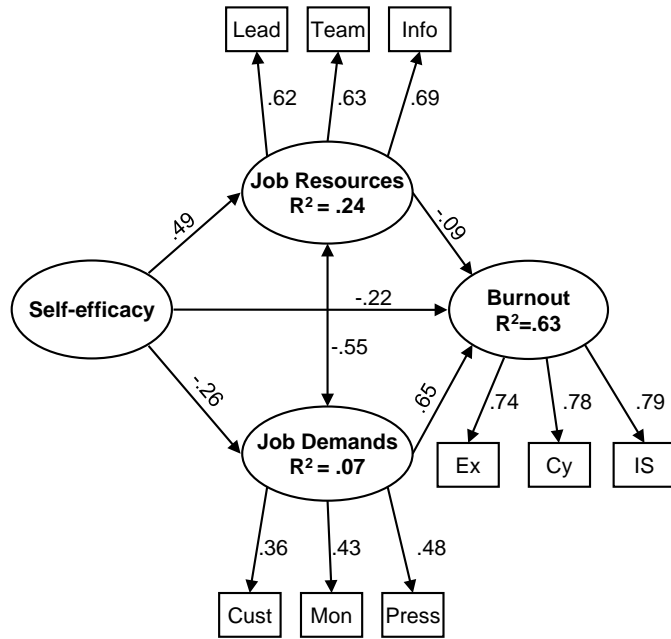
Team level. Self-efficacy was negatively associated with job demands (*H5a*) and positively associated with job resources (*H5b*). Job demands and job resources were related to job burnout ($\beta = .48$ and $\beta = -.74$ respectively; *H6a* and *H6b*, respectively) but *not* significantly related to each other. Self-efficacy was also negatively associated with burnout (*H7*). Furthermore, two partially mediated relationships were observed: job demands, $\beta = -.14$ ($CI_{asy} = \text{from } -.06 \text{ to } -.22$), and job resources, $\beta = -.37$ ($CI_{asy} = \text{from } -.19 \text{ to } -.58$), partially mediated the relation between self-efficacy with burnout (*H8*). This mediation accounted for 61% of the total effect of self-efficacy on burnout. The path linking burnout and absenteeism was positive and significant (*H9*). Therefore, at the team level all the hypotheses were confirmed.

Additional analyses at the team level. In addition, burnout mediated the relationship between job demands, $\beta = .31$ ($CI_{asy} = \text{from } .15 \text{ to } .39$), job resources, $\beta = -.26$ ($CI_{asy} = \text{from } -.16 \text{ to } -.48$), and sickness absenteeism. According to bootstrapped confidence intervals, there was also a significant indirect path, representing the mediated relation linking self-efficacy to sickness absenteeism indirectly through job resources and job burnout, with $\beta = -.21$ ($CI_{100boot} = \text{from } .02 \text{ to } .31$).

Alternative models

First, we investigated if the mediation of job demands and resources in the relation between self-efficacy and job burnout was full or partial. This was done by

Individual-level model



Team-level model

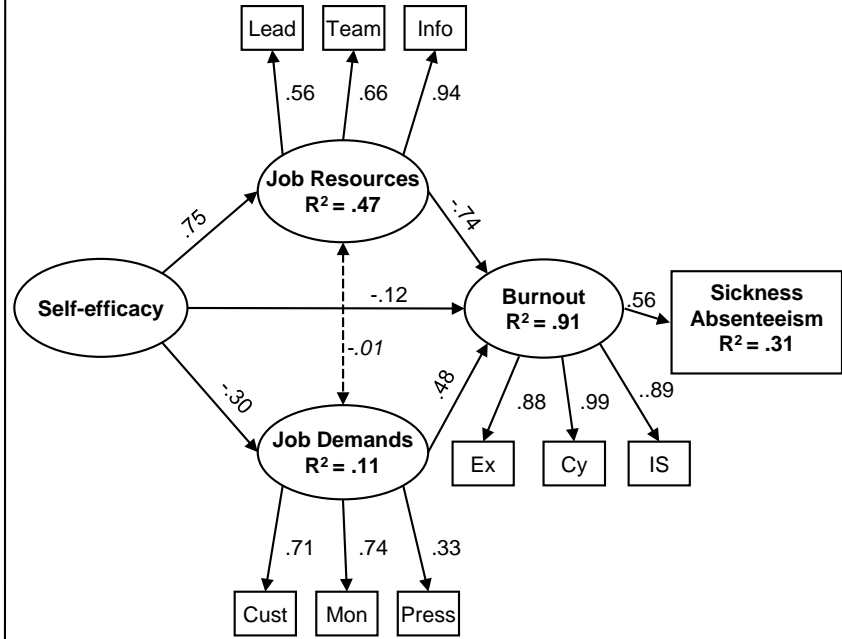


Figure 2. Standardized parameter estimates of the verified models at the individual (within) and team (between) level. All coefficients are significant ($p < .05$), except for those marked by a dotted line.

Notes: Lead = team leader support; Team = team support; Info = available information; Cust = customer contact; Mon = monotony; Press = time pressure; Ex = exhaustion; Cy = cynicism; IS = interpersonal strain.

sequentially fixing to zero the direct path from self-efficacy to job burnout at both the individual level ($\Delta\chi^2(1) = 126.85, p < .01$), and at the team level ($\Delta\chi^2(1) = 5.77, p < .01$). This full-mediational model fitted the data considerably less well than the hypothesized model: $\chi^2(71) = 1266.53, p < .001, CFI = .924, RMSEA = .057, AIC = 154397.020$.

Second, to further confirm our results, we tested an alternative model which assumes that job demands and job resources are (correlated) independent variables predicting workers' self-efficacy, which, in turn, predicted job burnout (at both the individual and the team level). As before, at the team level burnout predicted team-level absenteeism. This non-nested model had a very poor fit, inferior to that of the hypothesized model, according to fit indices, $\chi^2(73) = 5654.44, p < .001, CFI = .66, RMSEA = .12$, and the AIC value: 157197.32.

Discussion

The first aim of the study was to test a conceptual model that integrates the JD-R model (Demerouti et al., 2001) with SCT (Bandura, 1986), emphasizing the role of work self-efficacy. The second aim was to explore this model simultaneously at both the individual and team levels of analysis. This represents quite a novelty in burnout studies, since burnout traditionally has been examined mainly at the individual level. The third aim was to explore if such a model could predict company registered sickness absenteeism at the team level. The results from the present study fully support our hypotheses.

At the individual level, consistent with Social Cognitive Theory, we provided evidence that work self-efficacy is related to both perceived job demands and job resources, supporting the idea that "people of high efficacy focus [...] through ingenuity and perseverance [...] figure out ways of exercising some measure of control even in environments of limited opportunities and many constraints" (Bandura, 2000, p. 121). Hence, consistent with previous studies (Borgogni et al., 2010; Salanova et al., 2010), self-efficacious call centre operators, who believe they can effectively exert control on their work environment, are more likely to perceive working conditions more positively, by appraising monotony, time pressure and interactions with angry customers as less threatening. Compared to less efficacious operators, they are more likely to identify and take advantage of job resources, and thus perceive more support from their team leader and their colleagues, as well as more information on their work.

Consistent with the JD-R model (e.g. Demerouti et al., 2001; Schaufeli & Taris, in press), job demands and job resources were related to job burnout (i.e. exhaustion, cynicism and interpersonal strain) in the expected direction. At the individual level, especially job demands (monotony, time pressure and demanding customer contacts), were strongly associated with burnout, thus confirming their role of risk factors among call centre operators (e.g. Bakker et al., 2003b). Work self-efficacy had a strong direct relationship with burnout, because it likely fosters appropriate coping and stress-management skills (Bandura, 2000), thus representing a protective factor in its own right. However, basically it cannot be ruled out that a third factor (such as negative or positive affectivity), related to both self-efficacy and burnout, might act as a potential confounding variable in this relationship (Spector, 2006).

Moreover, job demands and job resources mediated the relationship between work self-efficacy and burnout, supporting the notion that self-efficacy may have a beneficial effect on burnout also because it results in more positive perceptions of job characteristics. This is consistent with the idea that the positive perception of job characteristics adopted by self-efficacious employees may significantly protect them from burning out. This indirect effect of self-efficacy was quite strong, accounting for 48% of the relationship between self-efficacy and burnout.

To a large extent, similar patterns of relationships were observed at the team level. Work self-efficacy was significantly associated with a more positive perception of job characteristics, which, in turn, was significantly related to burnout. The (partial) mediation of perceived job characteristics between self-efficacy and burnout was also supported at the team level and accounted for a high proportion of variance (61%) of the total effect of self-efficacy on burnout. These results suggest that the contribution of job characteristics is essential in explaining team differences in burnout. However, at the team level, the direct link between self-efficacy and burnout was also significant, suggesting that the mean level of individual self-efficacy within the team may be important for team-level burnout as well. Moreover, team-level burnout significantly predicted team absenteeism. Hence, teams with high levels of burnout tend also to have high levels of sickness absenteeism, with a rather high percentage of variance explained (31%). This result confirms previous studies attesting the role of other shared job attitudes (team commitment and team work satisfaction) as predictors of team absenteeism (Hauknecht et al., 2008).

However, we also observed some differences between individual- and team-level results. The most striking different result was that at the team level demands and resources seemed to be independent of each other, whereas, at the individual level, and consistent with the literature, they were negatively related. A possible explanation for this divergent result could be related to the different nature of shared perceptions of job demands and job resources among team members. Shared resources (supervisor and team support, and information available) are likely the result of social exchange and interpersonal interaction processes among team members, whereas shared demands (i.e. monotony, time pressure and demanding customer contacts) seem to be more "objective" in nature, reflecting specific environmental conditions (Van Yperen & Snijders, 2000). In contrast, at the individual level, perceived demands and resources are negatively related because, for employees, resources are instrumental in dealing with demands (Demerouti et al., 2001). Therefore, when an employee experiences high demands, this signifies at the same time that he/she also has a lack of resources to deal with these demands. As a matter of fact, if he/she could have had the benefit of sufficient resources, the demands would not have been so high in the first place. However, this logic does not apply at the team level, since there is no inherent link between shared demands and (lack of) shared resources.

Similarly, a significant but weak relationship was observed at the individual level between (lack of) job resources and burnout, whereas, at the team level, both job demands and job resources had strong relationships with burnout. As stated above, at the team level, demands and resources, because unrelated, had an independent relationship with job burnout. At the individual level, since demands and resources shared about 30% of their variance, part of the path from demands to burnout may be attributed to job resources.

Furthermore, the high impact of team-level job resources on team burnout may denote that the perceptions that really make the difference at this level are those conveyed through social interaction within the team, namely team leader and colleagues' support, but also shared information. More specifically, the quantity and quality of information available to the operators is contingent on the social interactions within the team, as conveyed by the team leader (during team briefings and daily supervision) and by team members (in the knowledge-sharing process to find team-based solutions for work problems) (Mulholland, 2002). That is, when team members can rely upon their colleagues and supervisor for support, assistance and information, they seem less likely to burn out, and thus also less likely to be absent from work (Hauknecht et al., 2008).

All in all, the proposed multilevel model that explained burnout and absenteeism among call centre operators was supported both at the individual level, as well as the team level.

Limitations and suggestions for future research

The present study has several limitations. First, except for sickness absenteeism, all measures were cross-sectional, and thus preclude causal inferences. However, a solid theoretical rationale and the poor fit of the alternative model testing a competing view of the putative role of self-efficacy within the JD-R model, increase the confidence in our assertions about the direction of effects. On the other hand, only multi-wave longitudinal studies could ascertain the most probable causal sequence of this mediational process.

Moreover, measures taken at the same time and place and from the same source are potentially at risk of common method bias, since they may share systematic covariation caused by the common measurement context or by the respondent itself (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). In our study, the use of self-reports was justified by the nature of the variables examined. In fact, we can expect that the individuals themselves are the most accurate source to report on their own internal states (such as burnout), perceptions (such as perceived job characteristics as opposed to actual) and self-evaluations (such as self-efficacy) (Spector, 2006). Although we used certain procedures to reduce the risk of common method bias, such as protecting the respondents' anonymity and using different scale formats, we cannot exclude entirely its influence in our results (Podsakoff et al., 2003). This problem did not affect the main outcome of this study, namely sickness absenteeism, which was assessed objectively, from organizational absence records.

Another potential concern is that sickness absenteeism was assessed at the team level, so that an individual level model could not be tested. The reason was that the organization wished to keep the questionnaire anonymous, and linking individual sickness absences to survey data of employees would have compromised anonymity and thus jeopardized participation in the study. On the other hand, the main contribution of our study was on clarifying the predictors of absenteeism at the team level, using a well-corroborated theoretical model (Schaufeli & Bakker, 2008; Bakker et al., 2003a).

Another limitation is related to the item construction. In our study, all variables (with the exception of sickness absence) were assessed at the subject level

and most of them had the individual as referent. It is worth noting that an explicit team referent would have been more appropriate for those items that referred to shared properties (such as shared perceptions or shared emotions) since they tend to produce less disagreement within groups and more variability between groups (Klein, Conn, Smith, & Sorra, 2001). However, our methodological approach, considering simultaneously the within and between components of variance of the same variables (by partitioning their between- and within-group variances), requires more than one referent for each item. Hence, this choice would not have been appropriate for the individual level. On the other hand, and similar to other studies (Ostroff, 1993) self-referenced items also had a significant within-unit consensus (the r_{WG} values are all high). Another issue related to item construction may concern the fact that self-efficacy was assessed with a tailored measure specifically constructed for this study. Although this measure was designed in accordance with Bandura's recommendations, further studies could compare our measure with other well-known and established self-efficacy scales related to work.

Moreover, future cross-level studies should detail the relationship between individual and team level characteristics in order to investigate the crossover of emotions, perceptions and attitudes within call centre teams (Bakker et al., 2006). For example, such studies could explore to what extent team burnout affects individual burnout, after controlling for the influence of self-efficacy and perceived work characteristics.

Despite the benefits of investigating the relationship between shared burnout and absenteeism at the team level using a comprehensive model, future research should also study in greater detail the role of other variables related to team absenteeism, such as "absence culture" (the shared understandings about absence in a given organization, and group cohesion; Miles, Schaufeli, & Van den Bos, 2011), in order to better understand group dynamics related to absence.

Practical implications

This multilevel study has direct implications for individual and team-based interventions to reduce burnout and sickness absenteeism. In fact, it has been argued that applying a multilevel perspective to interventions aimed at the reduction of stressors is more effective than focusing only at the individual level (Bliese & Jex, 2002; Van Yperen & Snijders, 2000).

At the individual level, it appears that the most promising interventions should focus on enhancing work self-efficacy beliefs. In fact, in the case of call centre operators, increasing their beliefs in their ability to master their work context may foster a better adjustment to their job and a better integration into the social context. Training might include strategies aimed at developing the main sources of work self-efficacy beliefs by focusing on: (1) mastery experience (setting graded attainments through perseverant effort and promoting learning from mistakes); (2) vicarious experience (via peer and team coaching to facilitate employees in sharing their experiences); and (c) verbal persuasion (through feedback, support and encouragement from supervisors and senior colleagues) (Bandura, 2000).

The team-level results provide information on what explains team differences in burnout and in absenteeism rates. Human resources management plans aimed at

reducing sickness absenteeism could include group-level goals and incentives aimed at rewarding teams having lower absence rates (Hauknecht et al., 2008). On the basis of our model, one of the most appealing practical implications is that team-level burnout, and in turn sickness absenteeism, can be reduced by enhancing the shared resources within the team and by reducing job demands. Interventions aimed at reducing job demands are not easily carried out in call centre settings, because most demands are inherent to the job and therefore difficult to change. However, job rotation and job re-design could be employed in order to increase task variety, time control and control over the length of customer interaction. On the other hand, it appears that interventions aimed at developing team resources would be more feasible in team-based organizations such as call centres. These might focus specifically on the team leader's role. Based on our results, training programs targeted at team leaders should be oriented towards fostering the level of collaboration among team members, developing a more supportive leadership style, and increasing the quantity and quality of information that is shared among the team members. Considering the strong impact of job resources that was found at the team level, increasing team resources will likely reduce burnout, and in turn, the team's sickness absenteeism rate.

Conclusion

The aim of this study was to expand the JD-R Model by emphasizing the active role of self-efficacy, not only as a protective factor for burnout, but also to foster positive work perceptions. Moreover, by testing our model beyond the individual level of analysis, we were able to relate team burnout to subsequent team sickness absenteeism. Such a multilevel perspective seems to be a promising approach for burnout research applied to team-based organizations, in which team members are likely to share similar experiences and feelings.

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