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Work ability and burnout: What comes first? A two-wave, cross-lagged study among early childhood educators

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(Article begins on next page)

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The relationship between psychosocial characteristics of the work environment and job satisfaction in an Italian public ECE service: A cross-lagged study --Manuscript Draft--

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The relationship between psychosocial characteristics of the work environment and job satisfaction in an Italian public ECE service: A cross-lagged study

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JOB SATISFACTION IN AN ITALIAN ECE SERVICE

Abstract

The present study uses a revised version of the Motivation–Hygiene theory as a theoretical framework to examine the cross-lagged associations in a sample of Italian pre-kindergarten (pre-k) teachers between job satisfaction and two types of psychosocial characteristics of the work environment: motivating factors (i.e., job demands, work meaning, and role clarity) and hygiene factors (i.e., work–family conflict, rewards, peer support, and superior support). In total, 349 pre-k teachers employed in a municipal early childhood education system of a city in Northwest Italy completed a questionnaire at two time points one year apart. Cross-lagged path analysis indicated a positive reciprocal relationship between job satisfaction and work meaning. The paths from job demands and superior support at Time 1 to job satisfaction at Time 2 were found to be significant. Finally, the path from job satisfaction at Time 1 to role clarity at Time 2 was positive and significant. The present study confirms the results of previous literature suggesting that motivating factors are more strictly associated than hygiene factors with job satisfaction. Moreover, it expands current knowledge by highlighting the importance of examining both the directionality of associations between the psychosocial characteristics of the work environment and job satisfaction. From a practical point of view, the study findings are important because they help identify possible interventions to promote the quality of work life and improve the quality of the service provided by Italian pre-k teachers.

Keywords. Job satisfaction, working conditions, cross-lagged design, pre-kindergarten teachers, early childhood education (ECE), Motivating-Hygiene theory.

The relationship between psychosocial characteristics of the work environment and job satisfaction in an Italian public ECE service: A cross-lagged study

Introduction

Job satisfaction is a central construct in understanding the relationship between individuals and their jobs (Judge et al., 2017). It is one of the most important indicators of job well-being and has been defined as a pleasure state resulting from the appraisal of an individual's job or job experiences (Locke, 1969). Job satisfaction involves the beliefs, judgments, and comparisons of actual outcomes with desired outcomes (e.g., expected and deserved) (Cranny et al., 1992).

The Early Childhood Educational (ECE) literature has provided increasing evidence of the importance of fostering the job satisfaction of pre-kindergarten (pre-k) teachers to ensure a positive classroom climate and possibly positive outcomes for the children's development (Egert et al., 2018). For instance, Miller and Bogatova (2009) found that the implementation of an intervention (i.e., the TEACH project in Pennsylvania) aimed at increasing pre-k teachers' job satisfaction improved the quality of the classroom climate as well as of the children's development, particularly with regard to their language reasoning and listening–talking skills. Whitaker et al. (2015) studied 37 Head Start programs in the U.S. and found that high workplace stress and dissatisfaction were associated with more conflict in teacher–children relationships. Moreover, Sandilos et al. (2015) found that pre-k teachers' mental health was predictive of the observed quality of didactic activities and classroom organization.

The ECE literature, which has mostly been developed in North America (especially in the U.S.), has highlighted that psychosocial factors of the work environment play a key role in affecting job satisfaction. Excessive workload and reduced work–family balance were

JOB SATISFACTION IN AN ITALIAN ECE SERVICE

found to be important sources of stress that may reduce teachers' job satisfaction (Palmer et al., 2012; Williamson & Myhill, 2008). Recent reforms aimed to promote quality standards have led to an increase in both working hours and the hours spent at home preparing teacher-related activities and filling out paperwork (Tobin, 2012). As underlined by studies developed in the U.S. context (Bullough et al., 2014), such reforms have led to work overload in the pre-k teaching profession (Madrid & Dunn-Kenny, 2010). Moreover, the continuous performance assessment and documentation of classroom activities by filling out paperwork exacerbated by recent reforms may lead teachers to sacrifice the quality of time spent in contact with children (Wells, 2015). This may cause teachers to perceive work as less meaningful and to experience decreased role clarity and control over their job (Bullough et al., 2014).

Another aspect indicated in the ECE literature as a potential issue for job satisfaction is poor reward in terms of pay and social status as a counterpart to the high demands and responsibilities of the pre-k teacher job (e.g., being responsible for children's safety and security). According to Wells (2015), poor reward is the main reason that ECE teachers in the U.S. leave the profession. Finally, social relations in the workplace are important for the well-being of teachers. ECE research has shown that superior support critically shapes and influences the workplace experience of pre-k teachers (Bullough et al., 2014; Wagner & French, 2010). In addition, relationships with coworkers were found to be a significant aspect of work experience in the ECE context (Kelly & Berthelsen, 1995). For instance, classes are often co-managed with other teachers, and decisions about classroom activities need to be collaboratively made.

The literature focused on job-related well-being in an ECE context is well-developed in North America and particularly in the U.S.; however, in European countries, studies about this topic are few (Taleb, 2013). In particular, studies in the Italian ECE context are rare (Camerino et al., 2011; Converso et al., 2015). Organizational differences between the U.S.

JOB SATISFACTION IN AN ITALIAN ECE SERVICE

and European ECE systems are relevant (Bertram & Pascal, 2016) and attributable to the deep cultural differences between these countries, particularly their policies, types of democracies, social welfare programs, etc. Therefore, the generalizability of the knowledge gained by studies developed in the U.S. context to European countries such as Italy is limited.

Following this line of thought, the present study aims to understand how the psychosocial characteristics of the work environment interact with job satisfaction in a sample of Italian pre-k teachers. The findings may help identify the interventions that promote the quality of working life among Italian pre-k teachers, thus fostering the quality of the children–teacher relationship and the children’s well-being. Moreover, the findings may expand current knowledge by contributing to identifying the differences and similarities in the quality of working life in ECE settings across different cultural and national contexts.

The Italian ECE system and the context of the study

In Italy, public ECE services were established in 1971 by law n. 1044. The legislation identified the municipal local authority as the party responsible for the development and coordination of activities related to the education and care of infants and children between 3 and 36 months of age. Law n. 1044/71 conceives early childhood centers as a service of public interest that all children in a municipality have a right to access, without any differences owing to social status or family features. The establishment of the ECE service represented, without a doubt, an important welfare action in support of parents’ need to balance work and family duties. However, according to the law, the primary focus of the ECE institution is on the children, and it aims to promote their complete psychological, cognitive, emotional, and social development (Barbieri, 2015). The principles guiding the newly established ECE services were in complete contrast to the principles of nursery facilities previously established in Italy during the fascist period (1922–1943), which were intended to

JOB SATISFACTION IN AN ITALIAN ECE SERVICE

support only low-income or disadvantaged families (in most cases, single working mothers) and not every family. National and regional legislation after law n. 1044 further endorsed the primacy of the psycho-socio-pedagogical element (child-need-centered) over the custody/welfare element (parent-need-centered) by defining the ECE experience as an integration of and not a substitution for parental care (Bertolini, 1997). From this perspective, in Italy, ECE can be seen as a service that offers a child an early experience, before kindergarten (4–5 years old), in the school system. Public ECE services should not be mistaken for other early childhood care services (offered both by the public and private system in Italy), such as babysitting, in which the development of children is not the primary aim (Barbieri, 2015).

Since 1980, the education and care programs in public ECE services have been strongly influenced by the Reggio Emilia philosophy, which conceives the children as a proactive subjects capable of developing their own learning process; this philosophy also recognizes the important role of the social environment in promoting early childhood development (Borghi & Guerra, 1992). According to the Italian legislation (Bertolini, 1997), the main aims of ECE services are to offer children, in collaboration with their families, a plurality of experiences aimed at expressing the potentialities of the group while respecting individual differences. In this context, a team of pre-k teachers plays a key role and has the following responsibilities (Barbieri, 2015):

- Developing and conducting the educational program, defining the assessment method and criteria.
- Preparing and conducting educational experiences and assessing results.
- Managing the settling-in phase of newcomers.
- Coordinating and supervising daily activities of welcoming, dining, sleeping, and personal hygiene.

JOB SATISFACTION IN AN ITALIAN ECE SERVICE

- Maintaining the relationship with parents and taking care of communication with the family.

Pre-k teachers are recruited in the municipal services through an open competition based on both qualifications and tests (Buro, 2016). In 2017, law n. 65 established that a bachelor degree in early or primary education was required to participate in the open competition. Before law n. 65 came into effect, the qualification for accessing the competition was simply a diploma in education, although a bachelor degree was considered an asset. In addition, during the 1970s and 1980s, to support the relocation of the teachers employed in the nursery facilities established before law n. 1044 to new municipal services, applicants with middle school degrees were permitted to participate in the open competition if they had obtained the habilitation to work as a pre-k teacher (achievable by attending a state course; e.g., for Piedmont Region, Regional Law n. 3/73, art. 17; Barbieri, 2015).

According to their employment contract, municipal pre-k teachers are required to work 36 hours per week in two diurnal shifts (from 7 a.m. to 6 p.m.) and earn a gross salary of about €24,000 per year (National Collective Contract of Employment, March 31, 1999; National Collective Contract of Employment, September 14, 2000, art. 31, par. 7). Compared with the average number of working hours of the general full-time working population in Italy and Europe (Eurostat, 2016), municipal pre-k teachers work less by 4.7 and 5.3 hours per week, respectively. Moreover, the average annual salary in Italy is €21,714 (men: €25,069, women: €17,236); therefore, the salaries of pre-k teachers employed in the municipal services are above the average national salary (Cottone, 2018). Based on this evidence, Italian pre-k teachers seem to have better employment conditions than their peers in other national contexts. For example, in the U.S., the annual average salary of a pre-k teacher is about \$22,230, which is half of the average national salary (\$44,564; men: \$49,192, women: \$39,988) (Bureau of Labor Statistics, 2018). Further, a pre-k teacher in the U.S.

JOB SATISFACTION IN AN ITALIAN ECE SERVICE

works on average 40 hours per week and is required to work unusual hours to fit parents' work schedules (Bureau of Labor Statistics, 2018).

Although Italian municipal pre-k teachers seem to have decent contractual conditions, several aspects related to the more general Italian socio-economic context may affect the teachers' perceptions of the work environment and job satisfaction. First, the global and national economic crises in recent decades have resulted in a progressive substantial contraction of the public expenditure in Italy. As a consequence, in the ECE services, similarly to all public services, the imposition of a hiring freeze has resulted in an increase of the teacher/children ratio and an intensification of the teachers' workload (Camerino et al., 2011). Second, a pension reform (law n. 201/2011) issued in Italy in 2011 has increased, for all workers, the qualifying age to receive pension benefits upon retirement from 60 to 66 years. This extension in the work–life span cycle has led to positive outcomes for organizations, such as the retention of highly experienced employees (Truxillo & Fraccaroli, 2016). However, the potential negative outcomes need to be considered. The most important is that the pension reform has been viewed in some cases as “forced” retention (Converso et al., 2015).

In Italy, the public ECE service turnover rate is very low, and the reasons for quitting are almost exclusively related to retirement or relocation owing to health problems (Converso et al., 2015). This low turnover rate in ECE services is unique to the Italian context. For instance, in the U.S., the turnover rate ranges from 25% to 50% per year (Wells, 2015), and job retention is a major issue in the early childhood sector, which is caused, in most cases, by job dissatisfaction (Miller & Bugatova, 2009). However, literature has clearly determined that especially when quitting the job cannot be considered a feasible option, low job satisfaction may lead to other detrimental effects, such as poor performance, absenteeism, and diminished service quality (Alessandri et al., 2017; Egert et al., 2018; Wegge et al., 2007). Thus,

JOB SATISFACTION IN AN ITALIAN ECE SERVICE

examining how the psychosocial characteristics of the work environment interact with job satisfaction in the Italian ECE context is important because it may improve the understanding of how to avoid the harmful outcomes of job satisfaction.

Theoretical framework and study hypothesis

A decisive contribution in shedding light on the mechanisms linking the characteristics of the work environment and job satisfaction has been made by the Motivation-Hygiene theory, developed by Herzberg et al. (1959). According to this theory, the psychosocial characteristics of the work environment can be divided into two main categories, which are assumed to have different effects on job satisfaction. The first category includes hygiene factors, which refer to the extrinsic aspects of the job. Hygiene factors can satisfy the basic needs of the human being, including security (safety, shelter, and stability) and social (belonging and inclusion) needs. Based on the literature review and the characteristics of the Italian context presented above, several hygiene factors are relevant in the ECE context: reward, work–family conflict, and support from superiors and colleagues. Reward is related to career perspective and pay (Kristensen et al., 2005), whereas work–family conflict reflects the degree to which the worker perceives that the work domain interferes with the private domain (Netemeyer et al., 1996). Karasek and Theorell (1990) defined social support at work as the “overall levels of helpful social interaction available on the job from co-workers and supervisors.”

The second category includes motivating factors, which refer to the intrinsic aspects of the job, such as the content and nature of the job. Motivating factors refer to more complex needs related to the self-esteem and self-actualization sphere. According to the literature presented above, several motivating factors are relevant in the ECE context: job demands, role clarity, and work meaning. Whereas job demands define the essence of a job by

JOB SATISFACTION IN AN ITALIAN ECE SERVICE

qualifying and quantifying what workers are required to do (Karasek, 1979), role clarity refers to the degree to which the tasks and objectives of a job are clearly defined (Leka & Houdmont, 2010). Work meaning indicates job meaningfulness and constructiveness (Kristensen et al., 2005) and refers to the perception that the job is part of a larger and more meaningful project with value for the entire community as well as the service recipients.

A main tenet of the Motivation-Hygiene theory (Herzberg et al., 1959) proposed that hygiene factors decrease dissatisfaction but do not enhance satisfaction; on the contrary, motivating factors, when available, enhance satisfaction, but their absence does not necessarily create dissatisfaction. Although the following corpus of literature obtained limited support of the original version of this tenet, the idea of the differential effect between hygiene and motivating factors on job satisfaction has been confirmed by many studies, demonstrating that whereas motivating factors have a long-lasting effect on job satisfaction, hygiene factors have a weaker effect that tends to disappear after accounting for the effect of motivating factors (Bassett-Jones & Lloyd, 2005; Sachau, 2007; Smerek & Peterson, 2006). In particular, evidence suggests that the idea of differential effect drawn from Herzberg's theory (Sachau, 2007) can be usefully employed to understand job satisfaction in specific professions and particularly in helping professions, the category to which pre-k teaching belongs. Helping professionals comprise workers who nurture the growth of or address the problems related to a person's physical, psychological, and emotional well-being (Stevens et al., 2012). Smith and Shields (2013) examined a sample of social workers and found that motivating factors are more strongly associated than hygiene factors with job satisfaction. Similarly, Wagner and French (2010), in a sample of pre-k teachers, found that whereas pay and other extrinsic working conditions did not significantly affect job satisfaction, the nature of the work itself (an intrinsic aspect) was the most important predictor of job satisfaction. These findings can be explained by the fact that helping professionals tend to have higher

JOB SATISFACTION IN AN ITALIAN ECE SERVICE

intrinsic job motivation than workers in other professions, as it is common for helping professionals to perceive their job as a “mission” (Stevens et al., 2012). This perception of work may lead teachers to view the intrinsic aspects of the job as more satisfying and motivating than the extrinsic aspects.

Moreover, in the last two decades, knowledge about job satisfaction has increased owing to the discoveries in the field of positive psychology (Fredrickson, 2003). In particular, cross-lagged studies have shown that psychological well-being indicators, including job satisfaction, are not only affected by but also affect the psychosocial work environment over time. Wong et al. (1998) reported that job satisfaction positively predicted several psychosocial factors of the work environment (i.e., autonomy, skill variety, and feedback) assessed two years later. In a similar vein, Xanthopoulou et al. (2009) found that job resources and work well-being outcomes reciprocally affected each other over time. Angelo and Chambel (2015) found a reciprocal relationship over time between job demands and burnout in a sample of firefighters. Finally, Orqvist and Wincent (2010) observed a significant reverse association between role conflict and job satisfaction after checking for the normal causation paths (role conflict to job satisfaction). Based on these studies, positive affective states possibly have the capability to broaden employees’ thought–action repertoires and build enduring personal, social, and job resources (Fredrickson, 2003). For example, satisfaction may be associated with the urge to savor the current circumstances and to integrate these circumstances into a new view of the job (e.g., broaden its meaning) or into a more harmonious social climate (e.g., by seeking support from colleagues).

Cross-lagged associations between characteristics of the work environment and job satisfaction have been investigated in various occupational contexts, including nursing and teaching (Lu et al., 2012; Ter Doest & De Jonge, 2006). However, based on our review of the literature, no cross-lagged studies have been conducted among pre-k teachers.

JOB SATISFACTION IN AN ITALIAN ECE SERVICE

Specifically regarding the relationship between hygiene and motivating factors with job satisfaction, no previous cross-lagged studies in any occupational sectors have tried to understand whether the concept of differential effects can be applied, in addition to the analysis of normal causation -i.e., the effect of hygiene and motivating factors on job satisfaction- as demonstrated by the current literature, also in the analysis of the reverse causation -i.e., the effect of job satisfaction on hygiene and motivating factors.

To fill this research gap, this study aims to test the cross-lagged associations between job satisfaction and hygiene and motivating factors at two time points one year apart. Based on the current status of the literature presented above, we hypothesize that motivating factors are more relevant than hygiene factors for job satisfaction among pre-k teachers. In other words, the model accounting for the cross-lagged associations between motivating factors and job satisfaction fits the data better, compared with the model accounting for the cross-lagged associations between hygiene factors and job satisfaction.

Method

Data collection and participants

A two-wave study was conducted in the ECE Services of the Municipality of a large city in Northwest Italy (in the Piedmont Region), which serves 8,759 children (21.9% of the 3-month-old to 5-year-old residents in the city). Questionnaires were administered to pre-k teachers working in 10 school districts of the ECE system in the municipality (dedicated to infants and children aged 3–36 months) as part of a larger project aimed at identifying interventions sustaining work-related quality of life among pre-k teachers working in the municipal service. The data was collected at two points in time one year apart (Time 1: March–May 2016; Time 2: March–May 2017). Both times, questionnaires were administered during the compulsory annual medical screening with an occupational physician

JOB SATISFACTION IN AN ITALIAN ECE SERVICE

on health and safety in workplaces (in compliance with Italian Law n. 81/08¹). In agreement with the management staff of the educational services and the occupational physician in charge of executing occupational health surveillance, a researcher from the Department of Psychology asked each teacher to complete the self-report questionnaire before the appointment with the physician. The medical examination and questionnaire completion were carried out during working hours in facilities provided by the ECE service. Questionnaire completion was voluntary, and each participant signed an informed consent form regarding the purposes of the study. The participants were also assured of their anonymity and confidentiality. In order to encourage participation, before the data collection started, the research team, in collaboration with the management of the service, organized a series of meetings in each school district specifically devoted to informing pre-k teachers about the research project. The research protocol was approved by the Bioethical Committee of the University.

In 2016 (Time 1), 435 pre-k teachers employed in the 10 school districts (28 sections) within the municipal ECE system were asked to complete a self-report questionnaire. Pre-k teachers involved were about 73% of the total number of pre-k teachers employed in the municipal service. The studies only included sections run by pre-k teachers directly employed by the municipality of Turin. On the other hand, the studies did not include sections (6 sections included in 7 of the 10 school districts) completely or partially managed using external personnel employed by non-profit social organizations that cooperate with the

¹ In Italy, health and safety at work are regulated by Legislative Decree Law 81/2008, which is the transposition of the European Directive on the protection of safety and health of workers (n. 89/391/CEE).

The main provisions of this decree are related to the organization of systematic procedures to improve health and safety in workplaces. In particular, the employer is required to organize within the workplace a protective and preventive service responsible for identifying risk factors and to implement proper actions to eliminate and reduce those risks. The Decree also contains a number of requirements on medical screening, identifying the occupational physicians as the responsible parties for the occupational health surveillance and the certification of employees' physical fitness to perform the tasks assigned to them.

JOB SATISFACTION IN AN ITALIAN ECE SERVICE

municipality to carry out the educational services. Also pre-k teachers that have temporarily left their job (for health, parental or other personal reasons) during the period in which the data was collected, have not been included in the study. A total of 405 (93.1%) workers filled out the survey. Of the 405 workers who answered at Time 1, a total of 380 were eligible to participate in the second wave. This discrepancy was caused by the fact that 11 of those who responded at Time 1 had been transferred out of the study units, and 14 had retired. Of the 380 workers, 349 (91.8%) completed the second questionnaire. Therefore, the sample used for this study consisted of 349 teachers, and the total of pre-k teachers who left the study (“abandon rate”) from Time 1 to Time 2 was 13.8% ($n = 56$).

To control for potential selection bias associated with study abandon at Time 2, statistical differences regarding the background variables (i.e., age, job seniority, educational level, and gender) and the study variables (i.e., job satisfaction, workload, work meaning, role clarity, work–family conflict, reward, peer support, and vertical support) were assessed by comparing the groups of respondents ($n = 349$) and non-respondents ($n = 56$) at Time 2. According to the χ^2 -test, no significant differences were found between the respondents ($n = 349$) and the non-respondents ($n = 56$) at Time 2.

Regarding the final dataset, all the participants (100%) were women 25 to 63 years of age ($m = 48.57$, $SD = 7.39$). Everyone in the sample reported having a permanent contract. The average job tenure as a pre-k teacher was 22.46 years ($SD = 9.67$) and ranged from less than one year to 40 years. Concerning the educational level, 1.8% had a middle-school degree and habilitation to work as an ECE teacher (Piedmont Region, Regional law n. 3/73, art. 17), 85.1% had a high school degree in pedagogy and/or education, and 13.1% had a master degree in education.

Measures

JOB SATISFACTION IN AN ITALIAN ECE SERVICE

At both time points, the same self-report questionnaire, including the following scales, was administered:

Job satisfaction was measured by the following single item: “Taking everything into consideration, how satisfied do you feel about your job on the whole?” (Kristensen et al., 2005; Dolbier et al., 2005; Italian adaptation: Viotti & Converso, 2016). The item was rated on a 10-point scale that ranged between 1 (extremely dissatisfied) and 10 (extremely satisfied). The means and standard deviations (M [sd]) of the entire sample were 7.03 [1.63] for Time 1 and 7.22 [1.56] for Time 2.

Job demands were measured by four items (e.g., “I am asked to do an excessive amount of work”; M[sd]_{T1} = 13.56[2.01]; M[sd]_{T2} = 13.65[1.95]) from the Job Content Questionnaire (JCQ, Karasek, 1985, Italian adaptation: Baldasseroni et al., 2001). The answers were given on a four-point scale ranging from 1 (strongly disagree) to 4 (strongly agree). This measurement showed good internal consistency, as Cronbach’s alpha was found to be acceptable for both time points ($\alpha_{T1} = .68$; $\alpha_{T2} = .61$).

Work meaning was measured using two items (e.g., “Is your work meaningful?” M[ds]_{T1} = 8.70[1.22]; M[ds]_{T2} = 8.65[1.25]) from the short version of the COPSOQ II (Kristensen et al., 2005; Italian adaptation: Setti et al., 2017). Cronbach’s alpha was .75 for Time 1 and .78 for Time 2. The answers were given on a five-point scale (1 = to a very small extent; 5 = to a very large extent).

Role clarity was measured with two items (e.g., “Does your work have clear objectives?” M[ds]_{T1} = 7.12[1.19]; M[ds]_{T2} = 7.00[1.33]) from the short version of the COPSOQ II (Kristensen et al., 2005; Italian adaptation: Setti et al., 2017) using a five-point scale for answers (1 = to a very small extent; 5 = to a very large extent). Cronbach’s alpha was acceptable for both time points ($\alpha_{T1} = .65$; $\alpha_{T2} = .70$).

JOB SATISFACTION IN AN ITALIAN ECE SERVICE

Work–family conflict was measured using two items (e.g., “Do you feel that your work drains so much of your energy that it has a negative effect on your private life?”

$M[ds]_{T1} = 6.49[1.47]$; $M[ds]_{T2} = 6.58[1.39]$) from the short version of the Copenhagen Psychosocial Questionnaire (COPSOQ II, Kristensen et al., 2005; Italian adaptation: Setti et al., 2017). Cronbach’s alpha was .75 for Time 1 and .80 for Time 2. The answers were given on a five-point scale ranging from 1 (to a very small extent) to 5 (to a large small extent).

Reward was measured using two items (e.g., “Considering all your efforts, are you fairly rewarded?” $M[sd]_{T1} = 6.38[1.35]$; $M[sd]_{T2} = 6.06[1.39]$) from the short version of the COPSOQ II (Kristensen et al., 2005; Italian adaptation: Setti et al., 2017). Cronbach’s alpha was .61 at Time 1 and .64 at Time 2. Answers were given on a five-point scale (1 = to a very small extent; 5 = to a very large extent).

Superior support was measured with two items (e.g., “How often do you receive support from your superior?” $M[sd]_{T1} = 6.43[1.28]$; $M[sd]_{T2} = 6.33[1.34]$) from the short version of the COPSOQ II (Kristensen et al., 2005; Italian adaptation: Setti et al., 2017) using a five-point scale for answers (1 = to a very small extent; 5 = to a very large extent). Cronbach’s alpha was acceptable ($\alpha_{T1} = .74$; $\alpha_{T2} = .71$).

Peer support was measured by four items (e.g., item: “People I work with are competent in doing their jobs” $M[sd]_{T1} = 12.11[1.37]$; $M[sd]_{T2} = 12.22[1.50]$) from the JCQ (Karasek, 1985; Italian adaptation: Baldasseroni et al., 2001). The answers were given on a four-point scale ranging from 1 (strongly disagree) to 4 (strongly agree). This measurement showed good internal consistency, as Cronbach’s alpha was found to be acceptable for both time points ($\alpha_{T1} = .72$; $\alpha_{T2} = .80$).

JOB SATISFACTION IN AN ITALIAN ECE SERVICE

The questionnaire at both times also included an eight-item scale from the JCQ (Karasek, 1985) measuring job control. However, as Cronbach's alpha suggested poor reliability for these scales ($< .60$), they were excluded from the analysis.

Control variables. The literature suggests that age, job seniority, and educational level may affect both job satisfaction and the perception of the characteristics of the work environment (Dobrow et al., 2016, Sandilos et al., 2018). Thus, these variables were considered as potential confounders in the present study.

Data analysis strategy

The data analysis was performed using IBM Statistical Package for the Social Sciences 24 (SPSS) and Mplus 7.3. The descriptive statistics included correlations among the major study variables within each wave and across the two waves.

To ensure that no other latent structures, except the one hypothesized, underlay the data and that the scales measured separate and well-identified constructs, a series of confirmatory factor analyses (CFAs) involving items of the major study variables (i.e., job demands, role clarity, work meaning, work-family conflict, reward, vertical support, and peer support) were performed separately for the two measurement points. More specifically, eight competing models, which included one to eight factors, were compared. The one-factor model assumed that all items loaded on a unique, larger single factor. According to Podsakoff et al. (2003), a poor fit of the one-factor model indicates that common method variance is not a major problem. The two-factor model assumed that items assessing the psychosocial factors loaded on one factor, while the item measuring job satisfaction was built as a separate observed variable. The three-factor solution, in addition to the job satisfaction factor, included two factors, referring to motivating (i.e., job demands, role clarity, work meaning) and hygiene (i.e., reward, work-family conflict, and support from peers and superior), respectively. In the

JOB SATISFACTION IN AN ITALIAN ECE SERVICE

four-factor model, while the intrinsic factor structure remained the same, the hygiene component was divided into two smaller factors: social support (i.e., from colleagues and superiors) and organizational context (i.e., work–family conflict and reward). The five-factor model was similar to the previous model, with the difference that work meaning items loaded on the corresponding factor. In the six-factor model, each item loaded on its corresponding factor, with the exception of role clarity and job demands, which loaded on the same factor as well as the two forms of social support. In the seven-factor model, each item loaded on its corresponding factor, with the exception of the two forms of social support items, which kept loading on a separate factor. Finally, the eight-factor model represented the expected factor structure.

Moreover, regarding multi-item scales, measurement invariance over time was assessed (Figure 1) (Vandenberg & Lance, 2000). When cross-lagged analysis is employed, evidence of measurement invariance (at least on a metric level) is an important prerequisite, ensuring that the cross-lagged relationships investigated are not biased by the instability of the factor structure of latent variables across time points (Widaman et al., 2010; Liang et al., 2018). There are four levels of invariance, and each of these levels builds upon the previous level(s) by introducing additional equality constraints on model parameters to achieve stronger forms of invariance. Therefore, a more restrictive level of invariance can be tested only if a previous level of invariance has been proven. Configural invariance (M1) refers to a model with no equality constraint imposed, as the aim is to ascertain the similarity of the item-factor structure across time occasions. Metric invariance implies that factor loadings (λ) were identical across occasions; therefore, these parameters were constrained to be equal (e.g., $\lambda_{1\text{time}1} = \lambda_{1\text{time}2}$, Figure 1) (M2). Scalar invariance is supported when measures have, in addition to identical factor loadings, also identical means across time points; therefore, at this level, factor loadings (e.g., $\lambda_{1\text{time}1} = \lambda_{1\text{time}2}$, Figure 1) and intercepts (e.g., $\tau_{1\text{time}1} = \tau_{1\text{time}2}$, Figure

JOB SATISFACTION IN AN ITALIAN ECE SERVICE

1) were constrained to be equal across time occasions (M3). Strict factorial invariance is achieved when factor loadings (e.g., $\lambda_{1\text{time}1} = \lambda_{1\text{time}2}$, Figure 1), means (e.g., $\tau_{1\text{time}1} = \tau_{1\text{time}2}$, Figure 1) and residuals (e.g., $\vartheta_{1\text{time}1} = \vartheta_{1\text{time}2}$, Figure 1) are the same across all the groups. Overall, in light of the study aim (cross-lagged analysis), the achievement of metric invariance could be considered acceptable (Liang et al., 2018), providing evidence for invariance across factor loadings.

The study hypothesis was examined with cross-lagged modeling techniques (using path analysis). Cross-lagged panel models examine the predictive association between two variables over time, each checking for effects at earlier time points (Lewis-Beck et al., 2004).

Firstly, four models were compared with each other. The *stability model* included the autoregressive paths between the same latent variables measured at the different time points and the correlations between the latent variables measured at the same time (M1). The *causality model* included all the paths of the stability model in addition to the regressive paths from the work-related psychosocial factors measured at Time 1 to job satisfaction measured at Time 2 (M2). The *reverse causation model* included all the paths of the stability model in addition to the regressive paths from job satisfaction at Time 1 to the psychosocial factors measured at Time 2 (M3). The *reciprocity model* included all the paths in the previous three models (M4).

The study hypothesis was tested by comparing two alternative models. The first model (model 5) included, in addition to the paths of the stability model, all the paths -in both directions- linking hygiene factors and job satisfaction. Similarly, the second model (model 6) included all the paths of the stability model as well as all the paths -in both directions- linking motivating factors and job satisfaction.

JOB SATISFACTION IN AN ITALIAN ECE SERVICE

Because the data for this study had a nested structure, with teachers belonging to 10 school districts ($m_{\text{size}} = 34.90$; $\text{min} = 9$, $\text{max} = 64$) of the ECE services, for the analyses conducted in MPLUS, this nesting effect was controlled using a sandwich estimator via the TYPE = COMPLEX command and by identifying “school districts” as a cluster variable. This sandwich estimator adjusted standard errors for the effects of the clustered data and provided more appropriate tests of statistical significance. Even though, according to the focus of our hypothesis, the constructs under study were only measured at a single level, a failure to account for the nested structure could create a risk of bias in the coefficient estimation at the individual level (Bliese, 2000).

Robust maximum likelihood (MLR) was used as an estimation method. The goodness of fit of the model was assessed using the ratio of χ^2 to the degrees of freedom (df), the comparative fit index (CFI), the Tucker–Lewis index (TLI), the standardized root mean square residual (SRMR), and the root mean square error of approximation (RMSEA).

According to Kline (2005), an χ^2/df ratio of 3 or less indicates a good model fit, and less than 2 indicates an excellent model fit. For the TLI and CFI indices, values higher than .90 are considered indicators of a good model fit (Bentler, 1995). A SRMR value of less than .08 indicates a good fit (Hu & Bentler, 1999), and an RMSEA value lower than .09 indicates an acceptable model fit (Byrne, 1998). The $\text{SB}\Delta\chi^2$ was used to compare nested models. In addition, the Akaike information criterion (AIC) and the Bayes information criterion (BIC) were used to compare the alternative (non-nested) measurement models (Kline, 2005). For the AIC and BIC, smaller values are indicative of better fitting models.

Regarding the test of time invariance, the change of the CFI (Meade, Johnson, & Braddy, 2008) and the Satorra–Bentler scaled chi-square difference test ($\text{SB}\Delta\chi^2$) were used to determine the presence of invariance. A significant difference in χ^2 and a difference higher

JOB SATISFACTION IN AN ITALIAN ECE SERVICE

than .002 in the CFI values between the less constrained and the more constrained model suggested a lack of invariance.

Results

Descriptive analyses

As shown in Table 1, all the major study variables revealed acceptable stability over time, as all pairs of the same variable measured at different times (Time1 and Time 2) reported relatively high r -values ($.28 \leq r \leq .70$). Moreover, job satisfaction was found to be significantly associated, and in the expected direction, with variables describing psychosocial factors of the work environment within and between waves.

Regarding the control variables, the t-test indicated that educational level was not associated with any of the major study variables. In light of this finding, educational level was not further considered as a control variable while testing the study hypotheses. Meanwhile, age and job seniority were found to be significantly associated with work–family conflict at Time 2 (positively) and role clarity at Time 1 (positively). In addition, job seniority was also positively correlated with role clarity and peer support at Time 2. Moreover, as age and job seniority were found to be highly correlated with each other ($r = .70$), in order to avoid a multicollinearity issue (Graham, 2003), only age was included as a control variable in the model in the cross-lagged analyses.

Measurement model

Table 2 presents the fit indices of the CFA. The hypothesized measurement model, consisting of eight correlated latent factors, was the only model showing a good fit for both measurement times (i.e., M8a and M8b). The AIC and BIC confirmed that this eight-factor model fitted the data significantly better than the alternative models that included one to eight

JOB SATISFACTION IN AN ITALIAN ECE SERVICE

factors. At both survey times, all the items in the eight-factor model loaded significantly on their corresponding latent factors.

Longitudinal invariance

Table 3 shows the goodness-of-fit indices of the models assessing longitudinal invariance. M1, in which no parameters were constrained to be equal across measures at the different time points, showed an acceptable fit to the data ($\chi^2 = 740.544$; $df = 555$; $CFI = .946$; $TLI = .95$; $SRMR = .04$; $RMSEA [CI] = .03[.03-.04]$), suggesting that configural invariance was achieved. After constraining the factor loadings across time (M2), no significant differences on χ^2 ($SB\Delta\chi^2 = 9.40$, $p = .60$) and CFI ($\Delta CFI = .002$) were observed between this model and the time-unconstrained model, providing evidence of metric invariance. The next model tested for scalar invariance by constraining the factor intercepts, in addition to the factor loadings. The ΔCFI was equal to $.004$, and a significant increase of the χ^2 ($SB\Delta\chi^2 = 21.15$, $p = .01$) was observed, suggesting that scalar invariance was not supported. Consequently, strict invariance could not be tested. Overall, these results provided evidence for an acceptable level of invariance, given that the factor loadings were found to be equivalent across time (i.e., metric invariance).

Cross-lagged associations

Preliminary analyses

Table 4 reports on the goodness-of-fit indices for the cross-lagged path analysis, which were performed to test relationships over time among the variables under study. M1, the stability model, showed acceptable values on the goodness-of-fit indices. In this model, all paths had significant values ($\gamma_{\text{job demands} \rightarrow T2} = .65$, $p = .001$; $\gamma_{\text{role clarity} T1 \rightarrow T2} = .30$, $p = .001$; $\gamma_{\text{work meaning} T1 \rightarrow T2} = .46$, $p = .001$; $\gamma_{\text{work-family conflict} T1 \rightarrow T2} = .58$, $p = .001$; $\gamma_{\text{reward} T1 \rightarrow T2} = .43$, $p = .001$; $\gamma_{\text{peer support} T1 \rightarrow T2} = .31$, $p = .001$; $\gamma_{\text{vertical support} T1 \rightarrow T2} = .49$, $p = .001$; $\gamma_{\text{job satisfaction} T1 \rightarrow T2} = .32$,

JOB SATISFACTION IN AN ITALIAN ECE SERVICE

$p = .001$). From the stability model to the normal causality model, the addition of seven paths resulted in a significant increase in the chi-square ($SB\Delta\chi^2 = 17.29$, $p = .01$). Of the seven paths added, three were found to be significant. Specifically, it was found to be significant the paths from job demands ($\gamma = -.09$, $p = .01$), work meaning ($\gamma = .15$, $p = .03$), and vertical support ($\gamma = .11$, $p = .02$) measured at Time 1 to job satisfaction at Time 2.

The reverse model (M3) reported a higher chi-square than the normal causality model, M2 ($\Delta\chi^2 = 4.97$). This suggests that M2 fitted the data better than M3. However, the model fit of M3 was also satisfactory. Moreover, in M3, the two paths from job satisfaction at Time 1 to both work meaning ($\gamma = .16$, $p = .001$) and role clarity ($\gamma = .17$, $p = .005$) measured at Time 2 were found to be significant and positive. In comparison with the causality model ($SB-\Delta\chi^2_{M2-M4} = 12.96$, $p = .07$), the reciprocal model (M4, Figure 1) did not show a better fit to the data. However, an inspection of the paths revealed that the reciprocal model confirmed the results obtained in the two previous models. The paths from job demands ($\gamma = -.09$, $p = .001$), vertical support ($\gamma = .11$, $p = .005$), and work meaning ($\gamma = .15$, $p = .04$) measured at Time 1 to job satisfaction at Time 2 were found to be significant; on the other side, it was found to be significant the paths from job satisfaction at Time 1 toward work meaning ($\gamma = .15$, $p = .002$) and role clarity ($\gamma = .17$, $p = .006$) measured at Time 2.

After adjusting the model (see M4-B) for the effect of age ($\chi^2(df) = 86.38(24)$; CFI = .88; TLI = .77; RMSEA = .07(.06-.09); SRMR = .74), no change in terms of significance and direction were found in the relationships under study. As the adjustments for age have led to a poor model fit, this variable has no longer been included in the following models testing study hypothesis.

Study hypothesis testing

JOB SATISFACTION IN AN ITALIAN ECE SERVICE

Model 5 (see Table 4, Section B, Figure 2), including only the paths linking hygiene factors and job satisfaction (both directions), reported a good fit. In accordance with the results obtained in the preliminary analysis, the only significant association (excluding the paths of the stability model which were all significant) was the path from vertical support at Time 1 to job satisfaction at Time 2 ($\gamma = .11$, $p = .001$).

Model 6 (see Table 4, Section B, Figure 3), including the paths linking motivating factors and job satisfaction, showed that the autoregressive paths between the same latent variables measured at the different time points were all significant. Findings also confirmed the significance of the paths from job demands ($\gamma = .11$, $p = .01$) and work meaning ($\gamma = .17$, $p = .0001$) at Time 1 to job satisfaction at Time 2. Moreover, the positive influence of job satisfaction at Time 1 on work meaning ($\gamma = .11$, $p = .01$) and role clarity ($\gamma = .10$, $p = .02$) at Time 2 were also being confirmed. The model fit was excellent and the χ^2 showed a significant decrease compared to model 5, indicating that model 6 fitted the data significantly better.

Therefore, the study hypothesis - introducing the idea that motivating factors are more relevant, if compared with hygiene factors, for job satisfaction - has been confirmed by study findings. In particular, the model accounting for the cross-lagged associations between motivating factors and job satisfaction fitted the data better compared to the model accounting for the cross-lagged associations between hygiene factors and job satisfaction.

Discussion

The present study aimed to examine the cross-lagged associations between the psychosocial characteristics of the work environment and job satisfaction in a sample of Italian pre-k teachers at two time points one year apart. In particular, based on a revisited version of the Motivation-Hygiene theory (Herzberg et al., 1959), we hypothesized that job

JOB SATISFACTION IN AN ITALIAN ECE SERVICE

satisfaction has stronger cross-lagged associations with motivating factors than with hygiene factors.

From a general standpoint, the findings supported our hypothesis: the model including only cross-lagged paths between job satisfaction and motivating factors fitted better than the model including cross-lagged paths between job satisfaction and hygiene factors. In particular, concerning motivating factors, the findings indicated a positive and reciprocal relationship between job satisfaction and work meaning. The paths from job demands (negatively) and superior support (positively) at Time 1 to job satisfaction at Time 2 were found to be significant. In addition, the path from job satisfaction at Time 1 to role clarity at Time 2 was positive and significant.

This study shows that the relationships between motivating factors and job satisfaction are more complex than originally expected. The fact that job satisfaction appears to primarily be a product of the intrinsic (i.e., motivating) aspects of the job among pre-k teachers confirms the findings of current literature. Similarly, our findings confirmed that the extrinsic aspects of the job do not have the same key role as the intrinsic aspects in fostering job satisfaction because they tend to be connected to more basic needs, such as social and security needs, which are not “core” for the professional identity (Holberg et al., 2018). More importantly, the novelty of this study is the finding that job satisfaction enhances the motivating factors (in particular, work meaning and role clarity) by producing positive effects on the work environment. This finding sheds light on an unknown mechanism: motivating factors and job satisfaction together generate a virtuous cycle by supporting each other over time. As we have hypothesized on the basis of previous studies conducted outside the framework of the Motivation-Hygiene theory, positive affective states, such as job satisfaction, may broaden employees’ thought–action repertoires and build enduring personal, social, and job resources, which can be used by groups and individuals to affect the work

JOB SATISFACTION IN AN ITALIAN ECE SERVICE

environment by improving organizational functions and working processes (Fredrickson, 2003). For example, highly satisfied teachers can actively shape the intrinsic aspects of their work environment with their actions (e.g., through the projection of daily tasks and activities) by contributing to re-(de)fining work meaning, role boundaries, and aims, which are also linked to the recipient's needs. Moreover, job satisfaction among pre-k teachers might contribute to promoting the development of a professional identity strongly centered on the value of serving the community (Sandilos et al., 2018). This may in turn strengthen the quality of the interactions with direct and indirect recipients, thus improving the capability of the service to meet community needs and be in tune with community transformation. Overall, these findings further endorse the awareness that pre-k teachers (and, in general, helping professionals) tend to be more focused on the intrinsic aspects rather than the extrinsic aspects of the job. In this view, the present study supports that for these professionals, job satisfaction is strongly dependent on the need to feel the integration between professional ethics and personal values (Stevens et al., 2012).

However, the finding concerning superior support deserves some specific considerations because it was the only hygiene factor that showed a positive effect on job satisfaction. This finding, although not consistent with our hypothesis, is not completely new; studies across various occupational settings have provided cross-sectional and longitudinal evidence of the effect of this factor on job satisfaction (Skogstad et al., 2015; Smerek & Peterson, 2007; Volmer et al., 2011). Regarding the ECE context, Wagner and French (2010), who considered various intrinsic and extrinsic aspects as potential predictors of pre-k teachers' interest in professional development, found superior support to be the only significant extrinsic aspect. However, note that the above-mentioned studies were not specifically developed to examine the differential effect between hygiene and motivating factors using the framework of the Motivation-Hygiene theory. Therefore, we cannot exclude

JOB SATISFACTION IN AN ITALIAN ECE SERVICE

a priori that the reasons for this unexpected finding might be related to the methodological limitations of this study, such as common method variance bias. Another factor that might have affected this finding concerns the item content of the scale superior support. This scale has been drawn by COPSOQ II (Kristensen et al., 2005), which is a “generalist” tool intended for any type of occupation and not specifically for occupations in the ECE context. Therefore, some items of this scale might have possibly been misinterpreted by the respondents because their content cannot be fully applied to work experience in an ECE context. This suspicion is reinforced by the unacceptable Cronbach’s alpha value obtained on the scale job control, which is drawn from another “generalist” tool (i.e., JCQ, Karasek & Theorell, 1990). Future study, in consideration of the issues arisen in the present study, should employ measures specifically developed for the ECE context and focus on examining the role of superior support by clarifying whether and to what extent the Motivation-Hygiene theory can be used to analyze the relationship between this factor and job satisfaction in an ECE context.

Overall, the present study contributes to the existing literature by confirming the importance of examining the directionality of the associations between the psychosocial aspects of the work environment and job satisfaction using a cross-lagged design. Previous studies have mostly employed cross-sectional designs, assuming the predicting role of the former on the latter. This study has advanced the current literature by highlighting the reciprocal relationship between motivating factors and job satisfaction over time. Since its establishment, several revisions have been proposed for the Motivation-Hygiene theory (Sachau, 2007). However, the present study is the first (not only among pre-k teachers but also among any working population) to provide evidence for a model that integrates the mechanism of reciprocity in the Motivation-Hygiene theory, demonstrating a bidirectional effect between motivating factors and job satisfaction.

JOB SATISFACTION IN AN ITALIAN ECE SERVICE

These findings have important practical implications. ECE systems play an essential role in modern societies. Research has shown that ECE programs positively affect the brain development of the enrolled children, with particular reference to cognitive and language skill (van Tuijl & Leseman, 2007). ECE systems also promote social integration by diminishing the risk of premature school abandon and supporting individuals in becoming active and contributing members of the society (Nores & Barnett, 2009). In this context, fostering teacher well-being is of primary importance because how they work may affect the ECE program quality and therefore have a direct impact on the well-being of the recipients of the service. In this view, our results make a relevant contribution by suggesting that to reinforce upward spiraling effects between teacher and recipient well-being, implementing interventions focused on the intrinsic aspects of the job is important. In particular, based on the sample of Italian pre-k teachers, the present study suggests that interventions and policies aimed at making work more meaningful, reducing workload, and improving management climate at ECE programs should be implemented to promote job satisfaction and, in turn, ameliorate the perceptions of work meaning and role clarity. For instance, interventions aimed at enhancing participatory decision-making processes at an organizational level may positively influence work meaning by increasing teachers' opportunities to directly affect the quality of the services they provide. Open campaigns aimed at increasing public awareness regarding the role of pre-k teachers as *educators* in the child development process might help promote the social image of this category (e.g., pre-k teachers are not *babysitters*), thus sustaining the positive spiral between work meaning and job satisfaction. In parallel, training programs aimed at helping pre-k teachers to develop new skills and to be up to date with the latest pedagogical approaches might be helpful. Moreover, interventions aimed at decreasing workload and the teacher/children ratio, such as new recruitment and job redesign, may be

crucial for promoting a healthy and satisfactory working life for pre-k teachers. Finally, training programs aimed at helping principals develop leadership skills might be beneficial.

Limitations

The representativeness of our results may be a major limiting factor. This study was conducted in a limited geographical area in Italy and involved only public ECE services. Future studies should ascertain the generalizability of the findings from the current study to other ECE settings. The relevance of intrinsic aspects for job satisfaction in our sample could also be explained by the fact that in the Italian public ECE setting, many extrinsic aspects of the job such as workload, work–family balance, and reward are not critical owing to the relatively favorable conditions of the employment contract in the public sector. From this perspective, in the ECE context, wherein the employment contract does not ensure sufficient stability of the job position (e.g., precarious job) or a decent salary, hygiene factors (e.g., reward), which remain unfulfilled, could possibly become more important than motivating factors in terms of affecting job satisfaction. Therefore, future studies should compare samples of pre-k teachers from various national contexts that have different working conditions (e.g., the U.S. and Italy). Regarding the Italian context, the present study should be replicated in private or mixed public/private ECE services in which contractual conditions—the stability of the job position, working hours, and salaries—are less advantageous than those offered by the public ECE system.

Another important limitation is that one of the scales, job control, which measures the relevant intrinsic aspects of the job in the ECE teaching context, could not be used because the obtained Cronbach's alpha suggested poor reliability. This issue limited the opportunity to identify the role of this important aspect of the work environment.

JOB SATISFACTION IN AN ITALIAN ECE SERVICE

A further limitation is that all the measures were self-reported. Data collected from a single source may introduce the problem of common method variance (Podsakoff et al., 2003). Future research would benefit from employing research designs that include a combination of objective and subjective measures or utilize data from multiple sources (i.e., co-workers, superiors, and recipients). For instance, future studies should focus on examining whether improving job satisfaction and motivation among ECE teachers provides an incremental gain in improving the quality of the ECE programs and, in turn, whether this gain in quality is related to improved children outcomes.

Other limiting aspects of this study are the two-wave design and the relatively small sample size. The use of a design with three or more waves with a larger sample size would allow for a deeper analysis of the associations between the psychosocial characteristics of the work environment and job satisfaction over time. In particular, it would allow for the detection of the non-linear relationship between these constructs as well as the investigation of the factors affecting the functional form of these relationships over time (e.g., using the data analysis technique of the non-linear latent growth curve models; Sterba, 2014).

References

Alessandri, G., Borgogni, L., & Latham, G. P. (2017). A dynamic model of the longitudinal relationship between job satisfaction and supervisor-rated job performance. *Applied Psychology, 66*(2), 207-232.

Ângelo, R. P., & Chambel, M. J. (2015). The reciprocal relationship between work characteristics and employee burnout and engagement: A longitudinal study of firefighters. *Stress and Health, 31*(2), 106-114.

JOB SATISFACTION IN AN ITALIAN ECE SERVICE

Baldasseroni, A., Camerino, D., Cenni, P., Cesana, G. C., Fattorini, E., ... & Ferrario, M. (2001). The assessment of psychosocial risk factors: The Italian version of the Job Content Questionnaire by R.A. Karasek. *Fogli di Informazione Ispesl*, 14(3), 20-32. [Italian]

Barbieri, N. S. (2015). *Early childhood services in Italy: History, pedagogical perspective, and operating modes*. Padova: Cleup. [Italian]

Bassett- Jones, N. & Lloyd, G. (2005). Does Herzberg's motivation theory have staying power? *Journal of Management Development*, 24(10), 929-943.

Bentler, P. M. (1995). *EQS structural equations program manual*. Encino, CA: Multivariate Software.

Bertolini, P. (1997). *Early childhood services and other related issues. Towards an educational perspective for the early childhood institution*. Firenze: La Nuova Italia. [Italian]

Bertram, T., & Pascal, C. (2016). *Early Childhood Policies and Systems in Eight Countries*. Hamburg, Germany: IEA Early Childhood Education Study.

Bliese, P. D. (2000). Within-group agreement, non-independence, and reliability: Implications for data aggregation and analysis. In K. J. Klein & S. W. J. Kozlowski (Eds.), *Multilevel theory, research, and methods in organizations: Foundations, extensions, and new directions* (pp. 349-381). San Francisco: Jossey-Bass.

Borghini, B. Q., & Guerra, L. (1992). *Handbook of Didactic Method in Early Childhood Education*. Bari: La Terza. [Italian]

Bullough Jr, R. V., Hall-Kenyon, K. M., MacKay, K. L., & Marshall, E. E. (2014). Head start and the intensification of teaching in early childhood education. *Teaching and Teacher Education*, 37, 55-63.

JOB SATISFACTION IN AN ITALIAN ECE SERVICE

Bureau of Labor Statistics, U.S. Department of Labor. *Occupational Outlook Handbook, Childcare Workers*. Available from: <https://www.bls.gov/ooh/personal-care-and-service/childcare-workers.htm> (accessed March 5, 2019).

Buro, A. (2016). *Pre-kindergarten teacher. Handbook for the preparation to the employment test and the profession*. Milano: Alpha test. [Italian]

Byrne, B. M. (1998). *Structural equation modeling with LISREL, PRELIS and SIMPLIS: Basic concepts, applications and programming*. Mahwah, NJ: Erlbaum.

Camerino, D., Fichera, G. P., Punzi, S., Campanini, P., Conway, P. M., Prevedello, L., & Costa, G. (2011). Work-related stress in nursery school educators in the Venice and Marghera districts. *La Medicina del Lavoro*, 102(3), 262-274. [Italian]

Converso, D., Viotti, S., Sottimano, I., Cascio, V., & Guidetti, G. (2015). Work ability, psycho-physical health, burnout, and age among nursery school and kindergarten teachers: a cross-sectional study. *La Medicina del lavoro*, 106(2), 91-108. [Italian]

Cottone N. (2018, June 18). Italian wages. Here the compensations from North to South. Milan ahead, Vibo Valentia the last. *Sole24ore*. Available from: <https://www.ilsole24ore.com/art/notizie/2018-06-15/stipendi-d-italia-ecco-retribuzioni-nord-sud-milano-testa-vibo-valentia-coda-173310.shtml?uuid=AE09I96E> (accessed March 5, 2019). [Italian]

Cranny, C. J., Smith, P. C., & Stone, E. F. (1992). *Job satisfaction: How people feel about their jobs and how it affects their performance*. New York, NY: Lexington Books.

Dobrow Riza, S., Ganzach, Y., & Liu, Y. (2016). Time and job satisfaction: A longitudinal study of the differential roles of age and tenure. *Journal of Management*, 44(7), 2558-2579.

JOB SATISFACTION IN AN ITALIAN ECE SERVICE

Dolbier, C. L., Webster, J. A., McCalister, K. T., Mallon, M. W., & Steinhardt, M. A. (2005). Reliability and validity of a single-item measure of job satisfaction. *American Journal of Health Promotion, 19*(3), 194-198.

Egert, F., Fukkink, R. G., & Eckhardt, A. G. (2018). Impact of in-service professional development programs for early childhood teachers on quality ratings and child outcomes: A meta-analysis. *Review of Educational Research, 88*(3), 401-433.

Eurostat (2016). *Average number of usual weekly hours of work in main job, by sex, professional status, full-time/part-time and economic activity - hours*. Available from: <https://ec.europa.eu/eurostat/web/products-eurostat-news/-/DDN-20180125-1> (accessed March 5, 2019).

Fredrickson, B. L. (2001). The role of positive emotions in positive psychology: The broaden-and-build theory of positive emotions. *American Psychologist, 56*(3), 218-226.

Graham, M. H. (2003). Confronting multicollinearity in ecological multiple regression. *Ecology, 84*(11), 2809-2815.

Herzberg, F., Mausner, B., & Snyderman, B. (1959). *The Motivation to Work*. New York: John Wiley and Sons.

Holmberg, C., Caro, J., & Sobis, I. (2018). Job satisfaction among Swedish mental health nursing personnel: Revisiting the two-factor theory. *International journal of mental health nursing, 27*(2), 581-592.

Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling, 6*, 1-55.

JOB SATISFACTION IN AN ITALIAN ECE SERVICE

Judge, T. A., Weiss, H. M., Kammeyer-Mueller, J. D., & Hulin, C. L. (2017). Job attitudes, job satisfaction, and job affect: A century of continuity and of change. *Journal of Applied Psychology, 102*(3), 356-374.

Karasek, R. A. (1979). Job demands, job decision latitude, and mental strain: implications for job redesign. *Administration Science Quarterly, 24*, 285-308.

Karasek, R. A. (1985). *Job Content Questionnaire and user's guide*. Lowell: University of Massachusetts Lowell, Department of Work Environment.

Karasek, R. A., & Theorell, T. (1990). *Healthy work: stress productivity, and the reconstruction of working life*. New York, NY: Basic Books.

Kelly, A. L., Berthelsen, D. C. (1995). Preschool teachers' experiences of stress. *Teacher and Teaching Education, 11*(4), 345-357.

Klassen, R. M., & Chiu, M. M. (2011). The occupational commitment and intention to quit of practicing and pre-service teachers: Influence of self-efficacy, job stress, and teaching context. *Contemporary Educational Psychology, 36*(2), 114-129.

Kline, R. B. (2005). *Principles and practices of structural equation modeling (2nd ed.)*. New York, NY: Guilford Press.

Kristensen, T. S., Hannerz, H., Høgh, A., & Borg, V. (2005). The Copenhagen Psychosocial Questionnaire-a tool for the assessment and improvement of the psychosocial work environment. *Scandinavian Journal of Work, Environment & Health, 31*(6), 438-449.

Leana, C., Appelbaum, E., & Shevchuk, I. (2009). Work process and quality of care in early childhood education: The role of job crafting. *Academy of Management Journal, 52*(6), 1169-1192.

JOB SATISFACTION IN AN ITALIAN ECE SERVICE

Leka, S. E., & Houdmont, J. E. (2010). *Occupational health psychology*. Chichester, UK: Wiley-Blackwell.

Lewis-Beck, M. S., Bryman, A., & Liao, T. F. (2004). *Encyclopedia of social science research methods*. London: Sage Publications.

Liang, X., Yang, Y., & Huang, J. (2018). Evaluation of structural relationships in autoregressive cross-lagged models under longitudinal approximate invariance: A Bayesian analysis. *Structural Equation Modeling: A Multidisciplinary Journal*, 25(4), 558-572.

Locke, E. A. (1969). What is job satisfaction? *Organizational Behavior and Human Performance*, 4(4), 309-336.

Lu, H., Barriball, K. L., Zhang, X., & While, A. E. (2012). Job satisfaction among hospital nurses revisited: a systematic review. *International Journal of Nursing Studies*, 49(8), 1017-1038.

Madrid, S., & Dunn-Kenney, M. (2010). Persecutory guilt, surveillance and resistance: The emotional themes of early childhood educators. *Contemporary Issues in Early Childhood*, 11(4), 388-401.

Meade, A. W., Johnson, E. C. & Braddy, P. W. (2008). Power and sensitivity of alternative fit indices in tests of measurement invariance. *Journal of Applied Psychology*, 93, 568-592.

Miller, J. A., & Bogatova, T. (2009). Quality improvements in the early care and education workforce: Outcomes and impact of the TEACH Early Childhood® Project. *Evaluation and Program Planning*, 32(3), 257-277.

JOB SATISFACTION IN AN ITALIAN ECE SERVICE

Netemeyer, R. G., Boles, J. S., & McMurrian, R. (1996). Development and validation of work–family conflict and family–work conflict scales. *Journal of Applied Psychology*, *81*(4), 400-410.

Nores, M., & Barnett, W.S. (2010). Benefit of early childhood interventions across the world: Investing in the very young. *Economics of Education Reviews*, *29*(2): 271-282.

Örtqvist, D., & Wincent, J. (2010). Role Stress, Exhaustion, and Satisfaction: A Cross-Lagged Structural Equation Modeling Approach Supporting Hobfoll's Loss Spirals. *Journal of Applied Social Psychology*, *40*(6), 1357-1384.

Podsakoff, P. M., MacKenzie, S. B., Lee, J. Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology*, *88*(5), 879–903.

Sachau, D. A. (2007). Resurrecting the motivation-hygiene theory: Herzberg and the positive psychology movement. *Human Resource Development Review*, *6*(4), 377-393.

Sandilos, L. E., Cych, L. M., Scheffner Hammer, C., Sawyer, B. E., López, L., & Blair, C. (2015). Depression, control, and climate: An examination of factors impacting teaching quality in preschool classrooms. *Early Education and Development*, *26*(8), 1111-1127.

Sandilos, L. E., Goble, P., Rimm-Kaufman, S. E., & Pianta, R. C. (2018). Does professional development reduce the influence of teacher stress on teacher–child interactions in pre-kindergarten classrooms? *Early Childhood Research Quarterly*, *42*(1), 280-290.

Setti, I., d'Errico, A., Di Cuonzo, D., Fiabane, E., & Argentero, P. (2017). Validation and psychometric properties of the Italian Copenhagen Psychosocial Questionnaire II--short version. *BPA-Applied Psychology Bulletin*, *65*(280), 48-57.

JOB SATISFACTION IN AN ITALIAN ECE SERVICE

- Skogstad, A., Aasland, M. S., Nielsen, M. B., Hetland, J., Matthiesen, S. B., & Einarsen, S. (2015). The relative effects of constructive, laissez-faire, and tyrannical leadership on subordinate job satisfaction. *Zeitschrift für Psychologie*, 222(4), 221-232.
- Smerek, R. E., & Peterson, M. (2007). Examining Herzberg's theory: Improving job satisfaction among non-academic employees at a university. *Research in Higher Education*, 48(2), 229-250.
- Smith, D. B., & Shields, J. (2013). Factors related to social service workers' job satisfaction: Revisiting Herzberg's motivation to work. *Administration in Social Work*, 37(2), 189-198.
- Sterba, S. K. (2014). Fitting nonlinear latent growth curve models with individually varying time points. *Structural Equation Modeling: A Multidisciplinary Journal*, 21(4), 630-647.
- Stevens, M., Moriarty, J., Manthorpe, J., Hussein, S., Sharpe, E., Orme, J., ... & Crisp, B. R. (2012). Helping others or a rewarding career? Investigating student motivations to train as social workers in England. *Journal of Social Work*, 12(1), 16-36.
- Taleb, T. F. A. (2013). Job satisfaction among Jordan's kindergarten teachers: Effects of workplace conditions and demographic characteristics. *Early Childhood Education Journal*, 41(2), 143-152.
- Ter Doest, L., & Jonge, J. (2006). Testing causal models of job characteristics and employee well-being: A replication study using cross-lagged structural equation modelling. *Journal of Occupational and Organizational Psychology*, 79(3), 499-507.
- Tobin, K. (2012). Control of teacher certification in the United States. *Peabody Journal of Education*, 87(4), 485-499.

JOB SATISFACTION IN AN ITALIAN ECE SERVICE

Truxillo, D. M., & Fraccaroli, F. (Eds.). (2016). *Age in the workplace: Challenges and opportunities*. New York, NY: Routledge.

van Tuijl, C., & Leseman, P. P. (2007) Increases in the verbal and fluid cognitive abilities of disadvantaged children attending preschool in the Netherlands. *Early Childhood Research Quarterly*, 22(2), 188-203.

Vandenberg, R. J., & Lance, C. E. (2000). A review and synthesis of the measurement invariance literature: Suggestions, practices, and recommendations for organizational research. *Organizational research methods*, 3(1), 4-70.

Viotti, S., & Converso, D. (2016). Relationship between job demands and psychological outcomes among nurses: does skill discretion matter? *International Journal of Occupational Medicine and Environmental Health*, 29(3), 439-460.

Wagner, B. D., & French, L. (2010). Motivation, work satisfaction, and teacher change among early childhood teachers. *Journal of Research in Childhood Education*, 24(2), 152-171.

Wegge, J., Schmidt, K. H., Parkes, C., & Van Dick, R. (2007). Taking a sickie: Job satisfaction and job involvement as interactive predictors of absenteeism in a public organization. *Journal of Occupational and Organizational Psychology*, 80(1), 77-89.

Wells, M. B. (2015). Predicting preschool teacher retention and turnover in newly hired Head Start teachers across the first half of the school year. *Early Childhood Research Quarterly*, 30(1), 152-159.

Whitaker, R. C., Dearth-Wesley, T., & Gooze, R. A. (2015). Workplace stress and the quality of teacher–children relationships in Head Start. *Early Childhood Research Quarterly*, 30(1), 57-69.

JOB SATISFACTION IN AN ITALIAN ECE SERVICE

Widaman, K. F., Ferrer, E., & Conger, R. D. (2010). Factorial invariance within longitudinal structural equation models: Measuring the same construct across time. *Child Development Perspectives, 4*(1), 10-18.

Williamson, J., & Myhill, M. (2008). Under 'Constant Bombardment': Work intensification and the teachers' role. In D. Johnson D. & R. Maclean (Eds.). *Teaching: Professionalization, development and leadership* (pp. 25-43). Dordrecht: Springer.

Wong, C. S., Hui, C., & Law, K. S. (1998). A longitudinal study of the job perception–job satisfaction relationship: A test of the three alternative specifications. *Journal of Occupational and Organizational Psychology, 71*(2), 127-146.

Xanthopoulou, D., Bakker, A. B., Demerouti, E., & Schaufeli, W. B. (2009). Reciprocal relationships between job resources, personal resources, and work engagement. *Journal of Vocational Behavior, 74*(3), 235-244.

Figure Captions

Figure 1. Longitudinal invariance: estimated and constrained parameters. Note: λ = cross-loading; τ = intercepts; ϑ = residuals.

Figure 2. Cross-lagged associations between hygiene factors and job satisfaction. For clarity, the correlations between factors measured at the same time are omitted in the figure (although they were estimated in the model). Note: ** indicates $p < .05$; * indicates $p < .01$.

Figure 3. Cross-lagged associations between motivating factors and job satisfaction. For clarity, the correlations between factors measured at the same time are omitted in the figure (although they were estimated in the model). Note: ** indicates $p < .05$; * indicates $p < .01$.

Table 1. Correlations of variables within and between waves.

	1a	1b	2a	2b	3a	3b	4a	4b	5a	5b	6a	6b	7a	7b	8a	8b
1a. Job satisfaction Time 1	1															
1b. Job satisfaction Time 2	.37**	1														
2a. Workload Time 1	-.18**	-.19**	1													
2b. Workload Time 2	-.20**	-.37**	.70**	1												
3a. Work meaning Time 1	.28**	.24**	.09	.04	1											
3b. Work meaning Time 2	.23**	.29**	.13*	.08	.47**	1										
4a. Work family conflict Time 1	.17**	.15**	-.01	.04	.29**	.25**	1									
4b. Work family conflict Time 2	.17**	.32**	.02	-.07	.16**	.32**	.36**	1								
5a. Role clarity Time 1	-.34**	-.22**	.39**	.31**	-.04	.00	-.01	.01	1							
5b. Role clarity Time 2	-.25**	-.39**	.31**	.46**	-.04	-.08	-.01	-.13*	.59**	1						
6a. Reward Time 1	.32**	.25**	-.17**	-.14*	.26**	.15**	.35**	.14*	-.17**	-.14**	1					
6b. Reward Time 2	.25**	.36**	-.15**	-.26**	.09	.16**	.19**	.37**	-.20**	-.30**	.47**	1				
7a. Coworker support Time 1	.15**	.11*	-.03	.01	.22**	.12*	.13*	.09	-.11*	-.06	.22**	.07	1			
7b. Coworker support Time 2	.10	.25**	-.04	-.01	.13*	.20**	.23**	.24**	-.04	-.07	.13*	.21**	.28**	1		
8a. Vertical support Time 1	-.25**	-.17**	.17**	.12*	-.05	.00	-.17**	-.12*	.08	.03	-.42**	-.23**	-.00	.03	1	
8b. Vertical support Time 2	-.21**	-.25**	.15*	.26**	-.01	-.08	-.10	-.31**	.04	.16**	-.28**	-.29**	.10	.00	.55**	1
9. Age Time 1	-.08	-.07	.01	.04	-.08	-.09	.12*	.05	.05	.16**	-.04	-.06	-.08	.07	.10	.04
10. Job seniority Time 1	.01	-.03	-.01	.04	-.03	.02	.17**	.12*	.03	.14*	.03	-.04	-.01	.19**	.09	.03

** . Correlation is significant at the 0.01 level (2-tailed). * . Correlation is significant at the 0.05 level (2-tailed).

Table 2. Confirmatory factor analyses (CFA): test of alternative models (good-of-fit indices).

	χ^2 (df)	χ^2 /df	CFI	TLI	SRMR	RMSEA (CI)	AIC	BIC
<i>Time 1 (a)</i>								
M8. Eight-factor model	194.63 (143)	1.36	.96	.94	.04	.03[.00 .04]	12830.62	13165.76
M7. Seven-factor model	367.79 (150)	2.45	.81	.76	.07	.06[.06 .07]	13025.62	13333.80
M6. Six-factor model	658.19 (156)	4.21	.57	.47	.11	.09[.09 .10]	13312.13	13597.20
M5. Five-factor model	745.85 (161)	4.63	.50	.41	.12	.10[.09 .11]	13383.45	13649.25
M4. Four-factor model	793.83 (165)	4.81	.46	.38	.13	.10[.10 .11]	13455.37	13705.76
M3. Three-factor model	948.70 (168)	5.65	.33	.24	.13	.12[.11 .12]	13616.11	13854.94
M2. Two-factor model	1036.21 (170)	6.09	.26	.17	.12	.12[.11 .13]	13684.69	13915.82
M1. One-factor model	1081.91 (170)	6.36	.13	.03	.12	.13[.12 .14]	13745.60	13976.90
<i>Time 2 (b)</i>								
M8. Eight-factor model	240.66 (143)	1.68	.94	.92	.05	.04[.03 .05]	12549.91	12885.05
M7. Seven-factor model	631.62 (150)	4.21	.70	.61	.10	.09[.08 .10]	12959.88	13268.05
M6. Six-factor model	766.54 (156)	4.91	.61	.52	.10	.10[.09 .10]	13090.74	13375.80
M5. Five-factor model	806.29 (161)	5.01	.58	.51	.11	.10[.10 .11]	13128.02	13393.82
M4. Four-factor model	951.77 (165)	5.76	.50	.42	.11	.12[.11 .12]	13219.28	13469.68
M3. Three-factor model	1085.01 (168)	6.45	.44	.36	.12	.13[.12 .14]	13447.18	13686.01
M2. Two-factor model	1146.74 (170)	6.74	.38	.30	.11	.13[.12 .14]	13487.51	13698.64
M1. One-factor model	1182.28 (170)	6.95	.35	.27	.13	.13 [.12 .14]	13528.331	13759.63

Note: df=degree of freedom. CFI=comparative fit index. TLI=Tucker-Lewis index. SRMR= standardized root mean square residual. RMSEA= root mean square error of approximation. AIC= Akaike information criterion. BIC=Bayes information criterion.

Table 3. Longitudinal invariance of measures collected at the two time points.

	$\chi^2(\text{df})$	χ^2/df	CFI	TLI	SRMR	RMSEA [CI]	Scaling Correction Factor for MLR	Model comparisons	$\Delta\chi^2(\text{p})$
M1. Configural invariance	740.554(555)	1.33	.946	.93	.04	.03[.03 .04]	1.0180	--	--
M2. Metric invariance	747.367(567)	1.31	.948	.93	.05	.03[.03 .04]	1.0267	M1-M2	9.40(.6)
M3. Scalar invariance	792.642 (586)	1.35	.940	.93	.05	.03[.03 .04]	1.0322	M2-M3	42.49(.002)

Note: df=degree of freedom. CFI=comparative fit index. TLI=Tucker-Lewis index. SRMR= standardized root mean square residual. RMSEA= root mean square error of approximation. AIC= Akaike information criterion. BIC=Bayes information criterion.

Table 4. Cross-lagged associations (path analysis) – Test of alternative models – Goodness-of-fit indices.

	χ^2 (df)	χ^2 /df	CFI	TLI	SRMR	RMSEA (CI)	Scaling Correction Factor for MLR	Model comparisons	Δ -SB χ^2 (p)
A- All psychosocial factors of the work environment									
M1 (stability model)	87.74 (56)	1.56	.96	.93	.06	.04[.03-.06]	1.073	--	--
M2 (causality model)	68.88(49)	1.40	.97	.95	.05	.04[.01-.06]	1.041	M1-M2	17.29(.01)
M3 (reversed model)	73.86(49)	1.51	.97	.94	.04	.04[.02-.06]	1.029	M1-M3	13.14(.06)
M4 (reciprocity model)	54.96(42)	1.31	.98	.96	.03	.03[.00-.05]	0.988	M2-M4	12.96(.07)
B- Motivating factors vs hygienic factors: model comparison									
M5 (hygienic factors)	81.79(48)	1.70	.96	.92	.05	.05[.03-.07]	0.995	--	--
M6 (motivating factors)	68.34(50)	1.36	.98	.96	.05	.04[.00-.06]	1.405	M5-M6	8.03(.01)

Note: df=degree of freedom. CFI=comparative fit index. TLI=Tucker-Lewis index. SRMR= standardized root mean square residual. RMSEA= root mean square error of approximation. AIC= Akaike information criterion. BIC=Bayes information criterion.

Figure 1

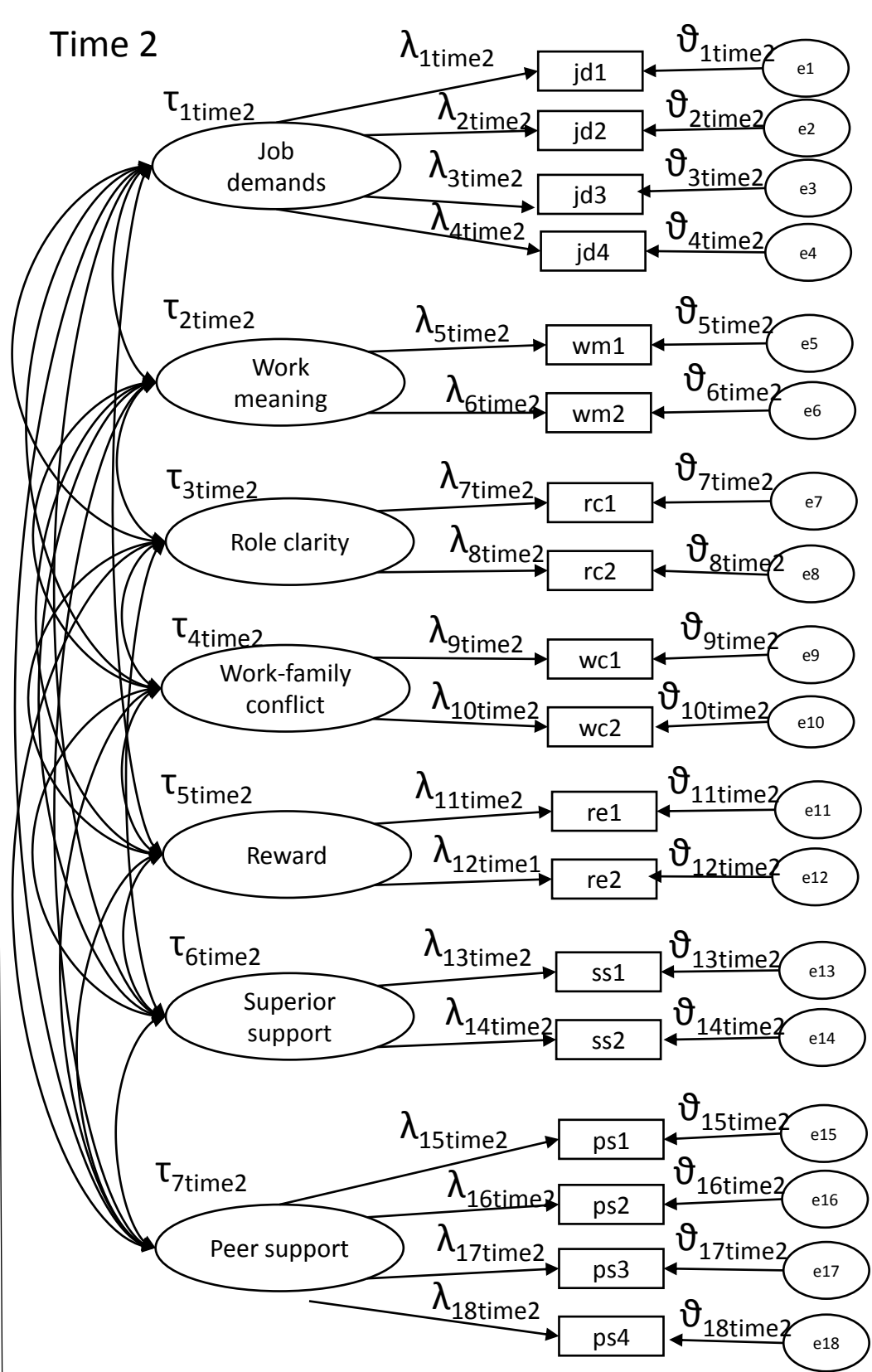
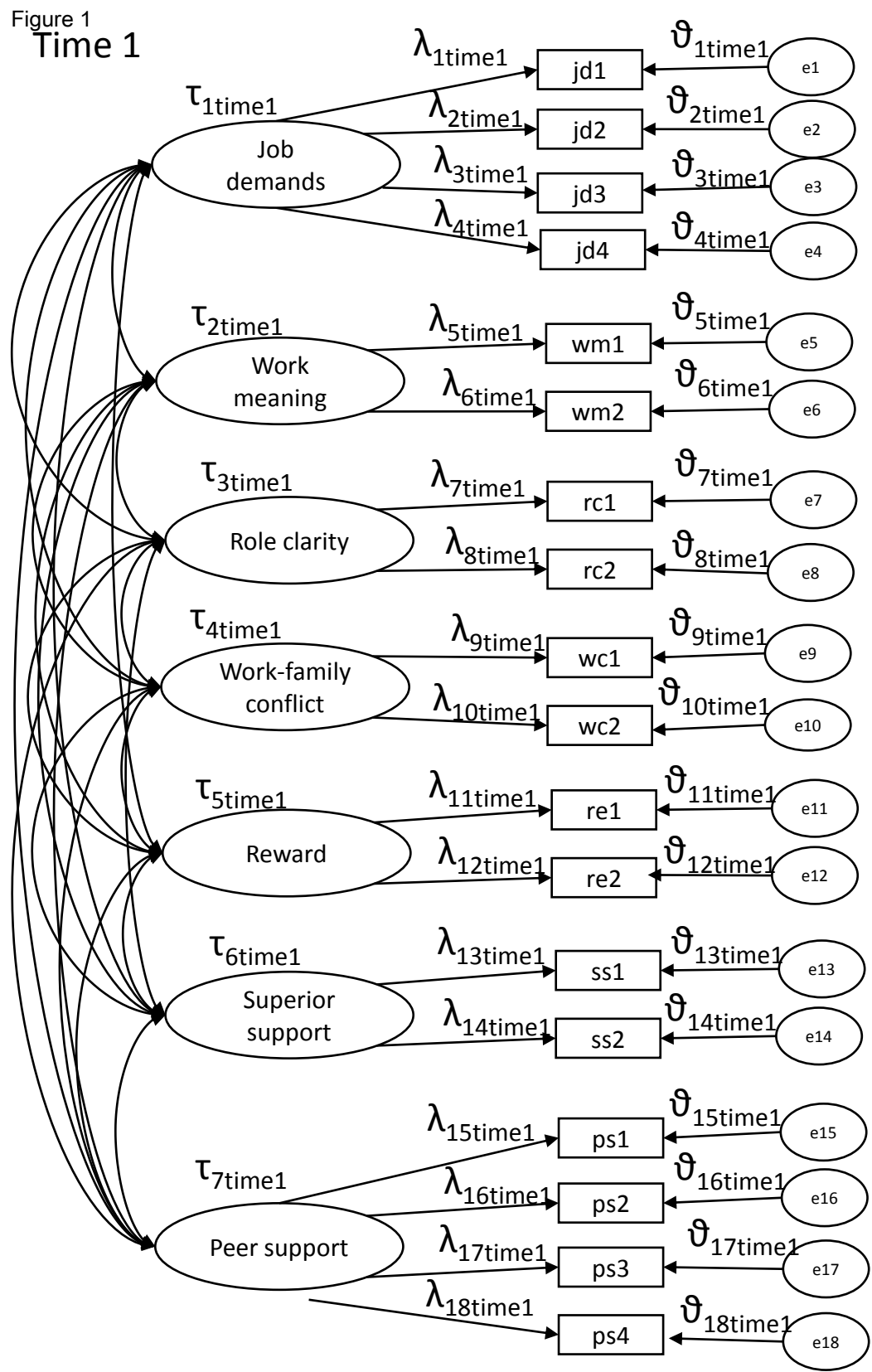


Figure 2

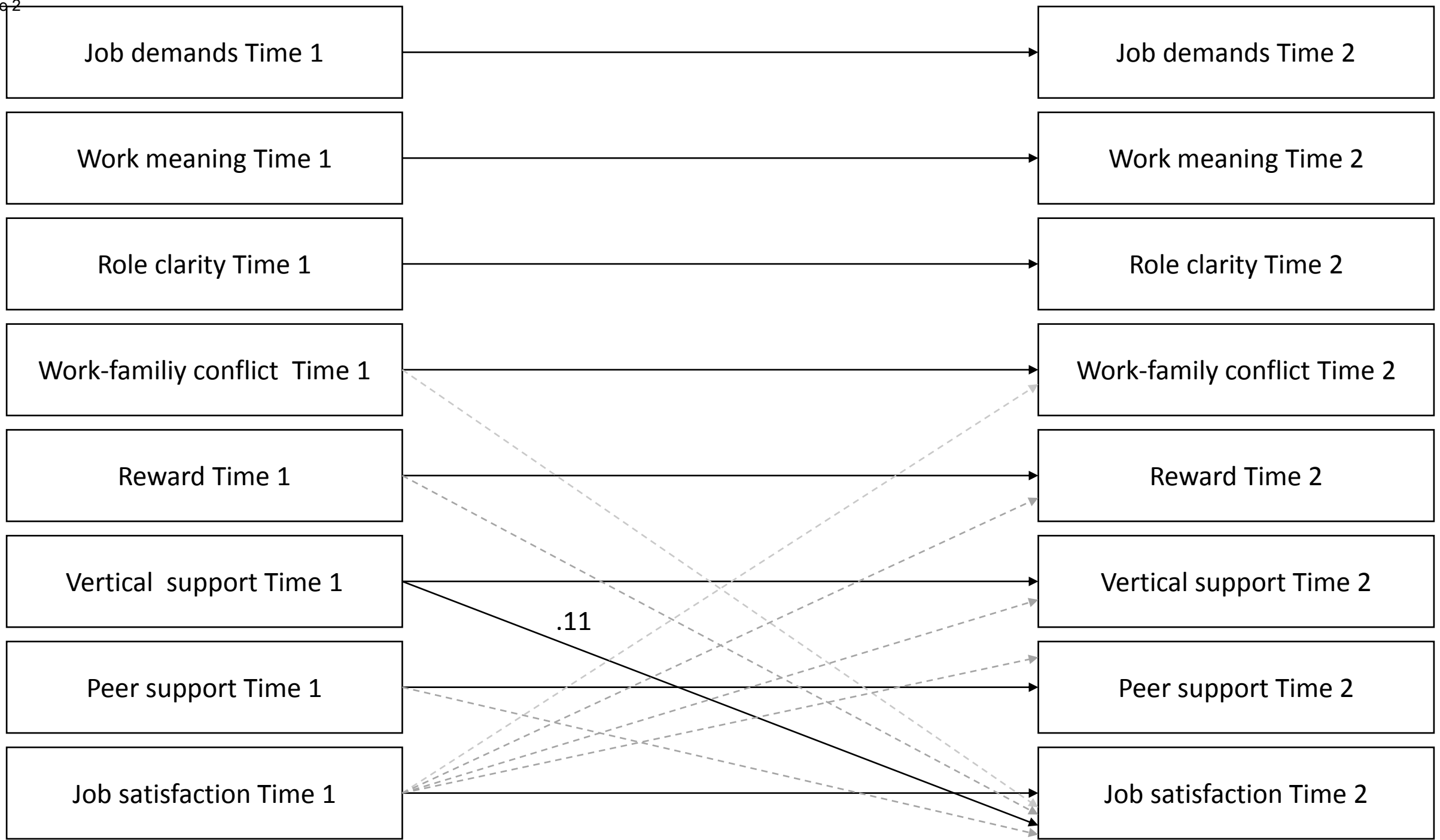
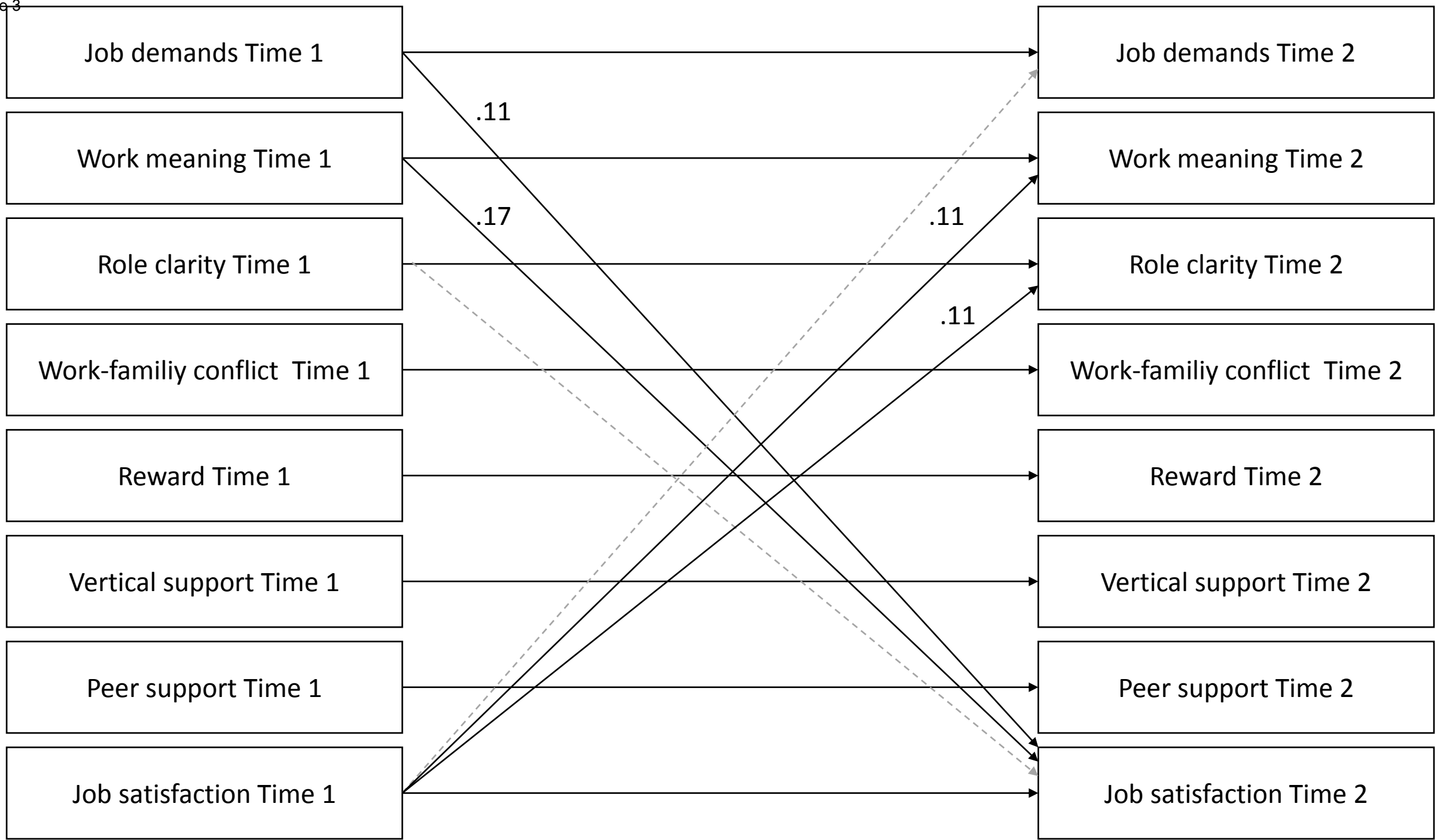


Figure 3



Highlights

- Job satisfaction has stronger cross-lagged associations (measured at a distance of one year) with the motivating factors, if compared with the hygiene factors.
- Concerning motivating factors, job satisfaction and work meaning reciprocally affect each other over time; job demands at Time 1 negatively predicted job satisfaction at Time 2; moreover, role clarity at Time 2 was negatively predicted by job satisfaction at Time 1.
- Concerning hygiene factors, superior support was the only factors which showed a significant relationship with job satisfaction (superior support at Time 1 predicted job satisfaction at Time 2) .

Author contributions

Study conception and design: DC, SV, IL, GG. Acquisition of data: DC, IS, SV, GG. Contributions to the analysis and interpretation of data: SV, GG, IS, DC. Drafting the article and revising it critically for important intellectual content: SV, GG, IS, DC. Approval of the final version to be submitted for publication: SV, GG, IS, DC.

Dear Editor,

we are very pleased to learn that the manuscript has been accepted and that the Editor and the Reviewers have appreciated our work. We are sending a revised version of our manuscript. We modified the paper, taking the suggestions/comments provided by the Editor into great consideration. We think that the paper is now ready to be included in the production queue. We attached as a supplementary file the point-by-point response to Editors.

We are grateful to the Editor and all the Reviewers for the comments and the suggestions provided throughout the various steps of the review process. We think that they have helped us improve the paper.

Best regards,

Sara Viotti

Dear Dr. Resnick,

We are sending a revised version of our manuscript. We modified the paper, taking the suggestions/comments you provided into great consideration. We attached as a supplementary file the point-by-point response to comments.

We hope that the revisions we have made address your concerns and that, based on them, the paper will be accepted for publication in Early Childhood Research Quarterly.

Best regards,

Sara Viotti

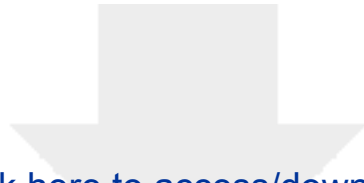
<p>Thank you for submitting a third revision of your manuscript to Early Childhood Research Quarterly. First, I want to apologize for the delay in sending this decision. Given that the manuscript was tentatively accepted pending additional minor changes, I did not send this manuscript out for review.</p> <p>Since my last set of suggestions focused primarily on the Discussion section, this was the section which I read carefully in the revision. Unfortunately, I found several additional serious issues that must be corrected before I can send the manuscript to the production queue. Primarily, the issues have to do with grammar, writing and clarity and also with how the results are discussed, especially those that do not support the initial hypotheses. As a result, please send me one more version before I put the paper into the production queue, to address the issues identified below:</p>	<p>Thank you for your accurate work on this paper. We think that your comments have really helped us improve the paper.</p>
<p>1. First, there is a minor issue in the Results section, Page 20, with the font in the first paragraph of the Results, starting with "-values (.28 = r = .70). Moreover, job satisfaction was found to be significantly associated..." and also later, page 22 in the "Preliminary analyses" section.</p>	<p>Thank you. We have addressed all these minor issues.</p>
<p>2. Page 24: Please fix "... based on a revisited version of the of the Motivation-Hygiene Theory ..." removing the double "of the of the."</p>	<p>We corrected this typo.</p>
<p>3. Also, same page "... if compared with" should really be "when compared with" or just "compared with ..."</p>	<p>We corrected this grammatical error.</p>
<p>4. Also, at the end of the page "which has proven that" is not really correct because nothing is really "proven." Rather, one can say "which has supported that" or "which has demonstrated that." I also think the sentence is overly long and complex and probably can be broken up into two sentences, perhaps as follows: "That job satisfaction appears</p>	<p>In the paper we have no longer used the verb "to prove" in this context. The sentence you mentioned has shorted and simplified.</p>

<p>to be primarily a product of intrinsic (i.e., motivating) aspects of the job among pre-k teachers and those in other helping professions confirms findings from the current literature. Intrinsic factors have the ability to fulfill a worker's need for self-actualization" but this is just one possibility."</p>	
<p>5. Page 27: "support from peers and support from supervisors are involved into distinct processes" is not correct grammatically and could have at least two different meanings, either: a) support from peers vs. supervisors involve different processes, or b) support from peers vs. supervisors have evolved over time into two distinct processes. Also, it would be important to indicate the mechanism for the existence of two distinct processes depending on the source of support. I also want to point out that since the reporting source is the same in the study (self-report) the mechanism has to take this into account (usually same-source measurement bias is quite high, so that these two aspects should be highly correlated).</p>	<p>This ambiguous sentence has been no longer included in the manuscript.</p>
<p>6. In reading the Discussion, I am having trouble with varying explanations given for each of the findings, and the fact that only the main results are consistent with the Motivation-Hygiene Theory. There seem to be at least two findings discussed on pages 25-27 that are not predicted by the theory; a) the inverse relationship between employee affective state to psychosocial aspects of the work environment, and b) hygiene factor showing a positive effect on job satisfaction. Each of these are discussed bringing in other theories, but the overall effect is that we do not really obtain strong support for the initial theory and hypotheses generated from it. Further, there does not appear to be one over-arching theory that can tie together all of the key findings, making it hard to make sense of the study results. Instead, we get piecemeal explanations that are not really satisfactory since they independently offer an explanation only for one of the key findings. If this is the state of affairs, then you need to bring this up, and to reduce saying "A possible explanation for this finding..." several times. In order for the Discussion to be satisfying it must use one perspective that ties together all of the findings, or, in the absence of this, the authors simply need to indicate the findings that do not fit, instead of giving piecemeal explanation. However, I would also look to methodological issues and particularly measurement issues in possibly explaining some of</p>	<p>We modified the discussion section. In the current version we have avoided to use single explanation for each result. On the contrary, we have discussed findings using an over-arching perspective (as we made in the introduction, in the hp rationale). Regarding the unexpected finding (the significance of the path support from superior to job satisfaction), as you suggested, we provided an explanation referring to methodological issues, recommending that future studies should be carried out in order to overcome our study limitation (i.e., common method bias, the use of "generalist" measures not specific for the ECE context).</p>

<p>the divergent findings, even though you did establish measurement invariance, particularly measurement source bias discussed briefly later under limitations. Could it be possible that respondents misunderstood some of the question items or interpreted them differently from their intent (and did so consistently at each time period), or indeed that the items did not fit with what ECE workers do in their roles? Possible methodological issues might be suggested by the explanation for one of the findings that "support from a supervisor cannot be properly considered a hygiene factor" and also by the low Cronbach's Alpha for job control (only mentioned later in the limitations), combined with common measurement source bias. I think it might be worth discussing why in ECE an otherwise well-known measure used for other professions did not do a good job of picking up this factor and in general what is different about working in ECE that may not fit existing theory with other helping professions.</p>	
<p>7. Page 27: "ECE system cover an essential in modern societies" is missing a subject and is generally vague and incomplete. Perhaps you meant to say that "ECE systems provide an important function in modern societies."</p>	<p>Thank you. In the current version, we corrected this sentence.</p>
<p>8. Page 28: "social undesirable or deviant behaviors" should read "socially undesirable or deviant behaviors" but I think you really want to talk more generally about enhancing human capital (putting it in the positive) so that children become active and contributing members of society.</p>	<p>In the current version, to express this concept, a positive form has been used ("ECE system also promotes social integration by diminishing the risk of premature school abandon and supporting children in becoming active and contributing members of the society.") see p. 27</p>
<p>9. Also, page 28 "children well-being" should be either "children's well-being" or "child well-being." Same with "recipients well-being," which should be "recipients' well-being" or "recipient well-being" but a better way to say it is "well-being of the recipients of services" or something along those lines.</p>	<p>Thank you. We addressed all these issues.</p>
<p>10. Same page 28, not sure what is meant by "the gain circle(s)," but the larger issue is that "the quality of the service indicators" is not the same as the example given, "(e.g children's outcomes)." Quality in ECE is typically assessed using well-known observational measures such as the ECERS-R or the CLASS and studies have not found a strong relationship between quality and child outcomes,</p>	<p>Thank you for have helped us clarify the meaning of this sentence. We have followed your suggestion. Moreover, we have moved this sentence in the limitation section (point 3, self-report data).</p>

<p>which is a completely separate dependent variable in this relationship. I think the real thing you want to say is that improving job satisfaction and motivation among ECE professionals may provide an incremental gain (e.g. your gain circle) in improving the quality of the ECE program, and that this gain in quality may, in turn, be related to improved children's outcomes. At least there is an inherent logic model or theory of change that needs to be made explicit, and quality should not be confused with child outcomes.</p>	
<p>11. In the next sentence in the above paragraph, page 28, the "corrective actions" need to be more explicit, such as interventions to improve say the policy and management climate at ECE programs, or methods for improving ECE worker's views of their roles as professionals (there is a huge issue in the field that this study addresses, which is the view that providing ECE services is a profession rather than just babysitting).</p>	<p>In the current version, we moved the part regarding interventions from conclusion to this point. Moreover, we have further detailed the explanation about possible interventions that, based on our findings, can be recommended.</p>
<p>12. Page 29, a multi-wave design does not necessarily improve mediating analyses, which could be done using just two waves. Also note that multi-wave includes two-wave designs, so you should talk about designs with more than two waves. What these designs really do is to identify non-linear relationships, whereas, in two-wave designs, the only relationships you can test are linear. I think this limitation should be discussed in two ways: a) discerning non-linear relationships, and then b) enabling analyses that identify factors that influence the functional form (non-linear), which could be mediators but not necessarily. In both ways though, one needs a large sample size, along with multiple source measures, which could also be mentioned.</p>	<p>The current version discusses this study limitation by referring to the two point indicated here (a and b). The need to use a larger sample size is mentioned as well (see last point in the limitation section)</p>
<p>13. Page 29: the sentence about representativeness should be the first sentence of the next paragraph, which discusses the issue. Also, I think you are making an important point but it is not clear when you say "extrinsic aspects of the job, as explained in the introduction, are not critical" without elaborating and/or reminding the reader what are these aspects of the job. I think the last point you make is the most important one, about doing a comparison of private or mixed public/private ECE with public ECE, within Italy, and then perhaps comparing to the US or other developed countries.</p>	<p>In the current version, we reported the representativeness as a first point in the limitation section. Moreover, the extrinsic aspects of the job we referred are explicitly mentioned here.</p>

<p>14. Page 30, as noted earlier, nothing in social science is ever fully proven (and for that matter even in other scientific fields) so I would avoid saying "proving the importance..." and instead you should talk about confirming or supporting the initial hypotheses, but I would add, that there were some discrepant findings.</p>	<p>In the paper we have no longer used the verb "to prove" in this context.</p>
<p>15. Page 30, the discussion of potential interventions is important but should not be in the conclusion section. Rather it needs to be moved up in the Discussion to where you talk about "corrective action." This is really what I had asked you to add, but it is in the wrong place, and for that matter, I do not think a "conclusion" sections is needed. Rather, everything in the conclusions has already been said, but said better and clearer in the conclusion, so I would move it up, reduce redundancies, and make the writing as clear it is here. If you really want to keep the conclusion section then just keep the first paragraph, and maybe do not make it a separate section but rather the ending to the paper, after the limitations.</p>	<p>In the current version, we have moved the part regarding interventions from conclusion to this point. Moreover, we have better explained how our findings advance current literature in the discussion section. As a results, the conclusion section has been no longer included in the paper.</p>
<p>I would also ask that you engage the services of a fluent English speaker (as their first language) to review the entire manuscript before you submit the next version, because most of the problems seem to be related to English grammar usage. It is very important to do some very careful line editing of the entire manuscript before it goes into production because the journal does only very light editing.</p>	<p>The entire manuscript has been review by a native English speaker.</p>



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