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Measuring the use of human resources practices and employee attitudes

The Linked Personnel Panel

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The Linked Personnel Panel

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Mit der Reihe „IAB-Discussion Paper“ will das Forschungsinstitut der Bundesagentur für Arbeit den Dialog mit der externen Wissenschaft intensivieren. Durch die rasche Verbreitung von Forschungsergebnissen über das Internet soll noch vor Drucklegung Kritik angeregt und Qualität gesichert werden.

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Contents

- Abstract 4
- Zusammenfassung 4
- 1 Introduction 5
- 2 Construction of the LPP Data Sets 6
- 3 Design of the LPP Surveys 8
 - 3.1 Employer Survey 8
 - 3.2 Employee Survey 9
- 4 Definition, Origin and Statistical Properties of the Scales used in the LPP
 - Employee Survey 9
 - 4.1 Job Characteristics and Job Perceptions 10
 - 4.2 Personal Characteristics 15
 - 4.3 Attitudes towards the Organisation 19
 - 4.4 Behavioural Variables 23
- 5 Correlation between the Scales 24
- 6 Further Development and Data Access 24
- 7 Conclusion 25
- References 26
- Appendix 32

Abstract

This paper introduces a new data source available for HRM researchers and personnel economists, the Linked Personnel Panel (LPP). The LPP is a longitudinal and representative employer-employee data set covering establishments in Germany and designed for quantitative empirical HR research. The LPP offers a unique structure. First, the data set combines employer and employee surveys that can be matched to each other. Second, it can also be linked to a number of additional administrative data sets. Third, the LPP covers a wide range of firms and workers from different backgrounds. Finally, because of its longitudinal dimension, the LPP should facilitate the study of causal effects of HR practices. The LPP employee survey uses a number of established scales to measure job characteristics and job perceptions, personal characteristics, employee attitudes towards the organisation and employee behaviour. This paper gives an overview of both the employer and employee survey and outlines the definitions, origins and statistical properties of the scales used in the individual questionnaire.

Zusammenfassung

Dieses Paper stellt eine neue Datenquelle vor, das Linked Personnel Panel (LPP), welche für Forscher in den Bereichen Personalmanagement und Personalökonomie verfügbar ist. Das LPP ist ein repräsentativer Arbeitgeber- Arbeitnehmer-Längsschnittdatensatz, der für die quantitative HR-Forschung konzipiert wurde. Das LPP bietet eine einzigartige Struktur. Erstens kombiniert der Datensatz Arbeitgeber- und -Arbeitnehmerbefragungen, welche einander zugespielt werden können. Zweitens kann er zusätzlich mit administrativen Datensätzen erweitert werden. Drittens deckt das LPP eine große Bandbreite an Betrieben und Beschäftigten mit unterschiedlichen Hintergründen ab. Schließlich macht das LPP aufgrund seines Längsschnittdesigns, die Untersuchung kausaler Effekte von HR-Praktiken möglich. Die Arbeitnehmer-Befragung des LPP nutzt etablierte Skalen, um Job-Charakteristika und -Empfindungen, persönliche Charakteristika, Einstellungen der Beschäftigten gegenüber der Organisation und das Verhalten von Beschäftigten zu messen. Dieses Papier gibt einen Überblick über die Arbeitgeber- und Arbeitnehmerbefragung des LPP und stellt Definitionen, die Herkunft und die statistischen Eigenschaften der genutzten Skalen im Beschäftigtenfragebogen vor.

JEL classification: J24, J81, M12, M51- M55

Keywords: HR practices; matched employer-employee data; Linked Personnel Panel; employee attitudes

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1 Introduction

One of the key interests of human resources management (HRM) researchers and personnel economists is to study the use and usefulness of HRM practices, taking into account the variety of contexts in which firms operate. Such evidence-based HR management requires detailed information about the status quo of practices used in firms, which is often collected through firm-level surveys. In management research, scholars have already for quite some time studied the connection between the use of so-called high performance work practices, i.e. combinations or bundles of human resource (HR) management practices, and employee attitudes and firm performance, typically with quite mixed results (for example Huselid 1995; Combs et al. 2006; Subramony 2009). More recently, economists have also started to conduct large-scale survey studies to investigate the connection between management practices and firm performance (Bloom/Van Reenen 2010; Bloom/Van Reenen 2007). However, due to the mainly cross-sectional nature of the used data sets, these studies typically cannot establish causal effects. Moreover, these studies frequently use firm-level data, which often does not permit the identification of channels through which changes in HR practices affect employee attitudes and behaviour.

In order to facilitate the identification of causal effects, a longitudinal dimension is of substantial importance to track changes in the use of these practices over time. As HR practices aim at affecting firm performance by changing employees' attitudes and behaviour, an analysis of their impact should ideally also take both the employer and employee perspectives into account.

This article introduces a new data set that meets these requirements: the Linked Personnel Panel (LPP). The LPP is a longitudinal linked employer-employee survey¹ that is representative for German private sector establishments with 50 or more employees. The LPP links employer-level information about HR policies with employee-level information about attitudes and behaviour, enabling researchers to analyse how individuals perceive their work and how they respond to HR policies. The longitudinal dimension of the LPP further facilitates the analysis of causal effects of HR policies on various outcome measures by eliminating time-constant unobserved variables.

This article introduces the design and sampling of the first wave of the employer and employee survey. It describes in detail the definitions, origins, and the statistical properties of the survey items used to assess job and personal characteristics, as well as attitudes and behavioural variables in the employee survey.

¹ This paper focuses on the first cross section of the LPP. The second survey wave is being conducted in 2014/2015 and a third is planned for 2016/2017.

For the employer survey, managers of 1,219 establishments provided detailed information about a broad variety of HRM practices and a number of firm characteristics. For the employee survey, a total of 7,508 employees working in these establishments were interviewed via telephone about job characteristics and job perceptions, personal characteristics, attitudes towards their organisation and behavioural variables. A unique feature is the possibility to link both dimensions of the LPP to various external administrative data sets and enrich the available information across a number of dimensions.

The employee survey adapts a number of items from well-established scales widely used in the literature. The measures incorporate job characteristics and perceptions such as work design, supervisory support, perceived fairness, clarity of organizational goals, reward structure, and work-family and family-work conflicts. Personal characteristics comprise personality (Big Five), risk attitude, trust and a number of socio-demographic variables. Attitudes include work engagement, affective commitment and job satisfaction. Behavioural variables comprise turnover intention, sickness absence, and, in later waves, real turnover.

The remainder of the paper is structured as follows: The second section describes the sampling and possibilities to link the LPP to other data sources. The third section summarises the key variables in the employer and employee surveys, and the fourth section outlines the definitions, origins and statistical properties of the scales in the employee survey about job characteristics and perceptions, personal characteristics, attitudes towards the organisation and behavioural variables. The last sections discuss the benefits and the potential of the LPP data for HRM research.

2 Construction of the LPP Data Sets

This section briefly describes the sampling and construction of the Linked Personnel Panel (LPP). The LPP was created in response to an enquiry of the German Federal Ministry of Labour and Social Affairs within the project “Arbeitsqualität und wirtschaftlicher Erfolg” (“Quality of work and economic success”). The project and data set are administered at the IAB (Institut für Arbeitsmarktforschung, Institute for Employment Research), and the questionnaires were jointly designed by the Centre for European Economic Research (ZEW, Zentrum für Europäische Wirtschaftsforschung), the Seminar for Personnel Economics and HRM at the University of Cologne and the IAB.²

The object of observation in the LPP employer survey is a specific establishment, i.e. a plant or subsidiary of a firm. The establishments for the LPP were drawn from the 2011 wave of the IAB Establishment Panel, an annual representative

² A detailed description of the sampling is available in the method report by Bellmann et al. (2015). Both LPP questionnaires and additional information can be downloaded from http://fdz.iab.de/en/Integrated_Establishment_and_Individual_Data/lpp.aspx. See Broszeit and Wolter (2015) for a detailed description of all variables of the LPP.

establishment survey of around 16,000 German establishments that has been conducted since 1993. The IAB Establishment Panel asks employers, among other things, about their workforce characteristics, innovation, investments, sales as well as legal and ownership structure (Fischer et al. 2009). Sampling from those establishments has the advantage that a variety of establishment information is already available (also from past waves of the IAB Establishment Panel), which implies the availability of historical information about the development of the establishments and permits the LPP to focus on specific HR dimensions.

The LPP sample is restricted to private sector establishments in manufacturing and service sectors with more than 50 employees subject to social security contributions. The sample was stratified according to four employment classes (50-99; 100-249; 250-499; 500 and more employees), five industries (metalworking and electronic industries; further manufacturing industries; retail and transport; services for firms; information and communication services) and four regions of Germany (north; east; south; west).

The establishment survey was carried out by TNS Infratest Sozialforschung, a professional survey institute that also administers the annual IAB Establishment Panel. TNS Infratest Sozialforschung distributed the LPP employer questionnaire after completion of the IAB Establishment Panel questionnaire to the same respondents. This ensures that both data sources are consistent and can be combined. The interviewers addressed CEOs and HR managers in face-to-face interviews between July 30th and October 12th 2012. The response rate was 76 per cent of the approached firms. With their participation, the establishments gave their consent to link the LPP survey information to other data sets available through the IAB via a unique, anonymous establishment identifier.

After completion of the field interviews with the employers, employees working in the participating establishments were drawn from the German Social Security Records. Indeed, reports from social security records have a substantial lag of several months. Therefore, a sample of employees who were employed on December 31st 2011 in one of the participating firms was drawn.³ The sample was restricted to participating establishments for which more than 50 employees could be identified that were subject to social security contributions at the end of 2011. Both restrictions reduced our final linked sample to 869 establishments. From those establishments, we drew a gross sample of around 30,000 employees.

The employee survey was carried out by Infas (Institut für angewandte Sozialwissenschaft GmbH), a professional survey institute. Infas contacted the employees via telephone at home and carried out 7,508 valid interviews (CATI) between December 3rd 2012 and April 3rd 2013. The response rate of realized contacts was

³ The questionnaire made sure that the respondents still worked in the participating establishment.

34.1 per cent. Finally, 6,051 interviewees gave their permission to link their data to the administrative data and the employer survey of the LPP.

An important additional feature of the LPP is the possibility not only to match the employer and the employee survey but also to link this data to various external sources available through the IAB. For instance, the establishment survey can be linked to the Establishment History Panel (Gruhl/Schmucker/Seth 2012).⁴ The Establishment History Panel is an administrative record that contains information about workforce characteristics, employment dynamics and the wage structure dating back to the establishment's foundation or 1975. Moreover, the employee survey can be linked to the Integrated Employment Biographies (IEB), which contain individual employment spells with information about earnings, employers, job switching, and basic qualifications from the individual's entry into the labour market or 1975 (vom Berge/König/Seth 2013). It is important to stress that the employment information from the IEB is not based on self-reported information by employees but on administrative data reported by the firms to the federal employment office to administer social security contributions. The Establishment History Panel is the aggregation of this IEB information. An important feature of the LPP is that the individual employment biographies are not only available for the 7,508 surveyed employees but also for their non-surveyed co-workers in the establishments covered by the employer survey.

3 Design of the LPP Surveys

3.1 Employer Survey

As the LPP employer survey can be linked to the annual IAB Establishment Panel, the LPP Employer Survey focuses in more detail on HR practices in firms and on additional relevant structural characteristics. Basic information from the regular IAB establishment panel already captures workforce structure and composition (number of employees, share of university graduates, females, part-time employees, quits, new hires, etc.), employee representation (union coverage, works councils, alternative representation forms), ownership structure (foreign ownership, family firm), legal structure (limited company, single-site firms, etc.), establishment-level performance measures (total sales, net profits) and capital intensity of production and service (inputs, investments, standard of technology used etc.).⁵ The LPP includes additional structural characteristics such as changes in the ownership structure, organizational structure, and business strategy. Nevertheless, the main focus lies on HRM practices within firms in the four areas "HR planning and recruitment", "HR development", "performance management and remuneration" and "retention, values and corporate culture".

⁴ The Establishment History Panel is an administrative data source based on employers' reports to social security authorities. The data is available from 1975 or, if a firm was founded later, from this time point on.

⁵ A detailed description of the variables is provided in Fischer et al. (2009).

In the area HR planning and recruitment, for instance, firms state information about their use of personnel planning tools and the length and characteristics of the recruitment process. HR development contains survey items about performance appraisals, target agreements between supervisors and employees, as well as feedback mechanisms and provided training. Performance management and remuneration deals with topics such as individual, team and firm-based performance pay and elicits the structure of performance pay. The section on retention, values and corporate culture includes items about the use of employee surveys, family-friendly policies, and external certifications and audits.

3.2 Employee Survey

The employee survey is based on administrative Social Security Records, which already provide a very accurate description of employment spells and salaries, starting with the individual's labour market entry. The LPP employee survey adds a number of socio-demographic questions about marital status, children, occupation, and migration background.

The employee questionnaire further includes detailed survey scales to assess job characteristics, personal characteristics, attitudes and behavioural variables. For most of these questions we implement well-established scales widely used in the literature. In addition, we developed a number of survey items to measure specific job aspects and employee perceptions about HR instruments. As there is no strong tradition in economics of developing survey measures to assess individual attitudes, the survey mainly uses scales developed in psychology and management research. Generating a set of survey scales of limited length that assesses key employee attitudes and can be administered in a telephone interview was a main objective in the design of the LPP Employee Survey. The next section describes the definition, origins and statistical properties of the used scales in more detail.

4 Definition, Origin and Statistical Properties of the Scales used in the LPP Employee Survey

This section briefly presents the definitions, origins and statistical properties of the main measures applied in the LPP employee survey. The tables report means, standard deviations, values of internal scale reliability (Cronbach's alpha) and factor loadings and, if scales were used that have been established in previous studies, compares their internal consistency with that reported in the respective original papers for which the scales were developed. The chapter starts with job characteristics and job perceptions, then turns to personal characteristics, employee attitudes towards the organization and finally describes behavioural outcome variables elicited in the survey or available from administrative data.

It is important to note that the LPP employee survey is a telephone survey with the key intention of giving a broad overview of HR practices and employee perceptions. Due to budget considerations and length requirements, we therefore tried to use short scales that can be administered in a telephone interview.

4.1 Job Characteristics and Job Perceptions

The LPP contains a number of items measuring specific aspects of an employee's work contract and job design. In detail, the LPP comprises items eliciting basic job characteristics, aspects of work design, rewards and incentives, and training and development. Beyond these mostly rather objectively measurable characteristics, the LPP employee survey also includes scales measuring more subjective perceptions about job characteristics.

Basic Job Characteristics

A first important component of the LPP employee survey is factual information on basic job characteristics, such as the occupational position, whether the employee holds a supervisory position, and in this case on the number of subordinates, the contractual and actual working time, the contractual status (full-time, part-time, fixed-term, or permanent work contract), overtime and overtime compensation, shift work, weekend work, and detailed information on the possibility to work from home.

Work Design

Work design describes how jobs, tasks and roles are structured, enacted, and modified. But to some extent survey items on work design also reflect employees' perceptions about how these structures affect individual, group, and organizational outcomes (Grant/Parker 2009). These work design characteristics can be influenced by human resource management practices, but the production technology and work processes are also important factors in influencing attitudes and behavioural variables (Rhoades/Eisenberger 2002; Patterson et al. 2005; Humphrey/Nahrgang/Morgeson 2007). To describe various workplaces and occupations, Morgeson and Humphrey (2006) developed the Work Design Questionnaire (WDQ), which encompasses 21 items in the four categories task, knowledge, and social characteristics as well as work context.⁶ The LPP entails one item each taken from the WDQ scales decision-making autonomy, task variety, initiated interdependence, received interdependence, and physical demands (Table 1). Furthermore, a modified item on work conditions (e.g. noise, temperature) and a measure of time pressure are included.

⁶ Each scale contains three to six single questions. The items are: autonomy regarding decision making, work scheduling and work methods, task variety, task significance, task identity, and feedback from job (task characteristics); job complexity, information processing, problem solving, skill variety, and specialization (knowledge characteristics); social support, initiated and received interdependence, interaction outside organization and feedback from others (social characteristics); physical demands, ergonomics, work conditions, and equipment use (work context).

Table 1
Work design items

Construct	Item	Mean (std. dev.)
Decision-making autonomy	The job allows me to make a lot of decisions on my own.	1.98 (1.0)
Task variety	The job involves a great deal of task variety.	1.75 (0.95)
Initiated interdependence	Other jobs depend directly on my job.	2.06 (1.18)
Received interdependence	The job depends on the work of many different people for its completion.	2.64 (1.33)
Physical demands	The job requires a lot of physical effort.	3.65 (1.47)
Work conditions (modified)	At work I am exposed to unpleasant ambient conditions such as noise, extreme temperature, unpleasant lightning or odours.	3.26 (1.55)
Time pressure	I often have time pressure over a long period or I have to deal with several important tasks at the same time.	2.45 (1.24)

The items are taken/adapted from the Work Design Questionnaire by Morgeson and Humphrey (2006) and are measured on a five-point Likert Scale.

Reward and Incentive System

Compensation and in particular performance-contingent pay is a major driver of employee selection, motivation and performance (Milkovich/Newman 1996; Lazear 2000; Prendergast 1999). The LPP contains a number of variables to describe the salary and reward system. The salary can be measured either with a direct question in the LPP about the net earnings in the last month before the interview, or using the linked administrative social security records, which cover average daily gross earnings of the entire last year and for the entire employment history.⁷ The LPP contains further questions regarding performance-related pay. It distinguishes between contractual and non-contractual variable payments (i.e. payments without clear regulations such as spot bonuses) and asks about the proportion of performance pay relative to total salary. More detailed information, for instance about the extent to which performance pay is based on individual, team, or company performance, is also elicited in the LPP establishment survey. Furthermore, information on pension benefits is available.

Training and Development

The LPP contains a number of survey items to elicit whether and to what extent employees have access to personnel and career development practices. Employees are asked about the intensity of formal training (number of days spent in trainings, whether they were released from work during trainings, and how the trainings' cost were split between employer and employee) and about their participation in further

⁷ The social security records report earnings up to the social security contribution threshold and include every payment subjected to social security.

training or qualification activities. Additional items focus on details about pre-scheduled annual appraisal interviews with supervisors (incidence and length of the interview) and whether written target agreements with supervisors are used.

Beyond the more objective items, the survey also includes a number of novel items about employees' subjective perceptions of the way personnel development and promotion decisions are made within their establishment (i.e. whether promotions are based on previous job performance and potential fit for the new position or depend on other factors rather than professional skills and ability, see Table 2). Moreover, one item measures the employees' general perception about the extent to which the employer is investing in his or her human capital. All items are measured on a five-point Likert scale from 1 "strongly disagree" to 5 "strongly agree".

Table 2
Perceptions about training and development

Item	Mean (std. dev.)
Our establishment is substantially interested in further development of my professional knowledge and competences.	3.59 (1.22)
In our establishment, employees expected to fit the new position best are predominantly promoted.	3.49 (1.23)
In our establishment, employees characterized by outstanding previous job performance are predominantly promoted.	3.37 (1.24)
In our establishment, promotions are mostly not based on professional criteria or job performance.	2.46 (1.27)
In the past two years within this establishment, I have been disadvantaged in personnel decisions, such as promotion, salary raise, performance appraisal or further training.	1.78 (1.28)

All items are measured on a five-point Likert scale.

Supervisory Support

Perceived supervisory support refers to the degree to which employees perceive that supervisors value their contribution and care about their well-being (Kottke/Sharafinski 1988; Rhoades/Eisenberger 2002). Because supervisors are agents of the organization with responsibility for directing and evaluating subordinates' performance, it is commonly argued that employees view their supervisor's favourable or unfavourable orientation towards them as indicative of organizational support (Eisenberger et al. 1986; Rhoades/Eisenberger 2002).

Patterson et al. (2005) derived a comprehensive organizational climate questionnaire describing various climate dimensions. We use three out of the five-items from their perceived supervisory support scale measured on a five-point Likert scale (Table 3). The chosen three items have an internal consistency of $\alpha=.84$, which is very close to the value of .88 of the original five-item scale.

Clarity of Organizational Goals

Clarity of Organizational goals is concerned with measuring the employees' awareness about clearly defined goals of an organization (Patterson et al. 2005). The specificity of organizational goals could affect work motivation through its influence on job-level goal specificity. In particular, if the goals of an organization are ambiguous, then the goals held at the job level are also likely to be more ambiguous. It has been argued that the clarity of organizational goals may allow supervisors and peers to be more able to provide summative or formative evaluations of an employee's performance that can help to clarify job and performance expectations (Wright 2004).

Moreover, the clarity of organizational goals can facilitate the coordination of behaviour of employees in different organizational units and lead to more consistent actions, which, in turn, may raise organizational performance (see for instance Kreps 1990; Hermalin 2012 for a discussion on the economic benefits of coordination and corporate culture).

Table 3
Supervisory support and clarity of organisational goals

Items (mean; std. dev.)	Cronbach's alpha/ Factor loadings	
	LPP	Patterson et al. (2005)
Supervisory support: alpha	0.84	0.88*
Supervisors show that they have confidence in those they manage. (3.76; 1.03)	0.868	0.712
Supervisors can be relied upon to give good guidance to people. (3.59; 1.04)	0.878	0.807
Supervisors show an understanding of the people who work for them. (3.72; 0.99)	0.864	0.851
Clarity of organisational goals: alpha	0.69	0.87*
People have a good understanding of what the organization is trying to do. (3.90; 1.01)	0.875	0.664
Everyone who works here is well aware of the long-term plans and direction of this company. (3.57; 1.19)	0.875	0.842

Both scales are taken from the Organisational Climate Questionnaire by Patterson et al. (2005) and are measured on a five-point Likert scale. * Refers to the original full scale with five items each.

We use two of the five-item clarity of organizational goals scale borrowing from the organizational climate questionnaire by Patterson et al. (2005). The two items have an internal consistency of $\alpha=.69$, which is below the value of $.87$ of the original five-item scale. Statistical properties of the supervisory support and clarity of organizational goals scale are shown in Table 3.

Perceived Fairness/Justice

Employees' fairness perceptions are often divided into three subdimensions: distributive, procedural, and interactional justice. Distributive justice refers to fairness of outcomes, procedural justice to fairness about the processes by which outcomes are allocated (decision-making) and interactional justice to fairness about interpersonal treatment, or the degree to which employees are treated with dignity, politeness, and respect (Cropanzano/Greenberg 1997; Lind 2001). Psychologists and management researchers have stressed the role of fairness concerns for organizational outcomes for decades. More recently, economists have incorporated fairness concerns in models of incentive contracting and have extensively studied the performance effects of fairness concerns in experimental studies (see, for instance, Gächter/Fehr 2002; Camerer/Malmendier 2007 for overviews).

Holtz and Harold (2009) show that overall justice perceptions are not stable over time, with roughly a quarter of the total variance in overall justice perceptions varying within persons. We take one item each from the distributive, procedural, and interactional justice scales developed by Kim and Leung (2007), as shown in table 4.

Table 4
Perceived fairness/justice measures

Construct	Item	Mean (std. dev.) / Cronbach's alpha
Distributive justice	I believe that I am being rewarded fairly at work.	3.50 (1.16)
Procedural justice	The rules and procedures to make decisions are fair.	3.46 (1.0)
Interactional justice	The way my supervisor treats me is fair.	3.97 (0.96)
Overall fairness: alpha		0.65

The items are taken from the justice scales by Kim and Leung (2007), each measured on a five-point Likert scale.

Work-Family and Family-Work Conflict

Work-family and family-work conflicts refer to inter-role conflicts that occur if a person's membership in one group generates pressure on the role responsibilities of another group's membership (Kahn et al. 1964). Such role conflicts occur if either the family domain is constrained by the work role (work-family conflict) or the work domain is negatively affected by family responsibilities (family-work conflict) (Greenhaus/Beutell 1985).

Work-family and family-work conflict measures are taken from Netemeyer/Boles/McMurrian (1996). We integrate three out of five items of each scale in the LPP employee survey (Table 5). The internal consistency of the work-

family conflict scale in the LPP (0.86) is very similar to the original values of 0.88-0.89 reported by Netemeyer/Boles/McMurrian(1996), whereas the value for the family-work conflict scale in the LPP (0.70) is lower than the ones reported in the original paper (0.82-0.90).

Table 5
Work-family and family-work conflict

Items (mean; std. dev.)	Cronbach's alpha/ Factor loadings
Work-family conflict: alpha	0.86
The demands of my work interfere with my home and family life. (2.36; 1.21)	0.883
The amount of time my job takes up makes it difficult to fulfill family responsibilities. (2.30; 1.22)	0.901
My job produces strain that makes it difficult to fulfill family duties. (2.42; 1.21)	0.868
Family-work conflict: alpha	0.70
I have to put off doing things at work because of demands on my time at home. (1.65; 0.87)	0.782
Things I want to do at work don't get done because of the demands of my family or spouse/partner. (1.39; 0.68)	0.838
My home life interferes with my responsibilities at work such as getting to work on time, accomplishing daily tasks, and working overtime. (1.43; 0.81)	0.745

The items are a selection of the 10-item scale developed in Netemeyer/Boles/McMurrian (1996), each measured on a five point Likert scale.

4.2 Personal Characteristics

Big Five Personality Traits

The Big Five personality traits are a well-established taxonomy to measure an individual's personality that has been validated in a series of psychological studies (see, for instance, Barrick/Mount 1991; Costa/McCrae 1995) and is now widely adopted in psychological research. The five broad, non-overlapping dimensions that describe an individual's personality are extraversion, conscientiousness, agreeableness, neuroticism, and openness to experience.

Extraversion refers to attributes such as being communicative, talkative, assertive, active, outgoing, sociable, and status-seeking (Barrick/Mount 1991). Conscientiousness refers to people who do a thorough job, are careful, responsible, organized, do things effectively and efficiently, are more successful in their jobs, show higher levels of performance motivation, and are detail-oriented, with a high level of task and goal orientation (Barrick/Mount 1991; Judge/Illies 2002). Agreeableness is characterized by traits such as being cooperative, tolerant, trusting, having a forgiving nature, being considerate and kind to others, as well as being concerned about other people's well-being, especially of those who live or

work closely with them (Barrick/Mount 1991). Neuroticism (emotional instability) is typically referred to attributes such as being anxious, emotional, insecure, getting nervous easily, and worrying a lot (Barrick/Mount 1991), whereas openness to experience comprises being curious, intelligent, original, coming up with new ideas, having an active imagination, and being creative and unconventional (Barrick/ Mount 1991; Judge/Ilies 2002). Personality traits have been found to be rather stable over time (Lucas/Donnellan 2011; Hahn/Gottschling/Spinath 2012).

The LPP measures the Big Five personality traits by applying a 16-item version of the Big Five Inventory short scale (BFI-S) developed for the SOEP (Gerlitz/Schupp 2005; Lang et al. 2011). Four of the five personality dimensions are measured by three items, whereas the openness to experience dimension includes four items. All statements begin with “I see myself as someone who”. Moreover, we apply a five-point Likert scale ranging from 1 (does not apply to me at all) to 5 (applies to me perfectly) instead of the SOEP 7-point Likert scale.

Table 6
Big Five Inventory short scale

Items (mean; std. dev.)	Cronbach's alpha/ Factor loadings	
	LPP	SOEP
I see myself as someone who...		
Extraversion: alpha	0.62	0.69
is communicative, talkative. (4.16; .87)	0.655	0.728
is outgoing, sociable. (3.93; .90)	0.688	0.737
is reserved (R). (3.05; 1.14)	0.784	0.795
Conscientiousness: alpha	0.58	0.59
does a thorough job. (4.51; .59)	0.791	0.820
tends to be lazy (R). (4.38; .79)	0.631	0.638
does things effectively and efficiently. (4.24; .59)	0.741	0.731
Neuroticism: alpha	0.56	0.61
worries a lot. (3.34; 1.14)	0.649	0.763
gets nervous easily. (2.52; 1.11)	0.800	0.796
is relaxed, handles stress well (R). (2.33; .92)	0.680	0.637
Agreeableness: alpha	0.47	0.53
is sometimes somewhat rude to others. (R) (3.74; 1.12)	0.818	0.782
has a forgiving nature. (4.21; .73)	0.414	0.568
is considerate and kind to others. (4.25; .64)	0.542	0.750
Openness to Experience: alpha	0.55	0.65
is original, comes up with new ideas. (3.71; .87)	0.498	0.623
values artistic, aesthetic experiences. (3.25; 1.17)	0.751	0.635
has an active imagination. (3.58; 1.02)	0.719	0.687
is eager for knowledge. (4.11; .82)	0.469	0.678

The scales are taken from the Big Five Inventory short scale BFI-S, measured on a five-point Likert scale.

Table 6 shows the items and factor loadings and compares the internal consistency for each of the Big Five dimensions of the LPP with those of the wave 2009 of the SOEP (SOEP, v28)⁸. Values of Cronbach's alpha are somewhat lower for all dimensions of the Big Five in the LPP compared to the wave 2009 of the SOEP (Richter et al. 2013). One possible reason for this is the survey method. The LPP employee survey asks participants via telephone (CATI), whereas the SOEP survey uses different survey methods such as CAPI, PAPI, and self-administered completion of questionnaires with or without an interviewer present. Depending on the interview method applied, values of internal consistency differ also in the SOEP (Lang et al. 2011). Notably, the reliability measures of the personality items are somewhat lower than the usually acceptable range. However, this is in line with previous research showing that shorter personality scales usually have a lower Cronbach's alpha, but nevertheless show the expected correlations to individual attributes and behavioural variables (Gosling/Rentfrow/Swann 2003).

Risk Attitudes and Trust

Although most decisions in life have to be made in situations of uncertainty, people differ in the extent to which they are willing to take risks (risk aversion is experimentally elicited, for instance, in Holt/Laury 2002). In their seminal paper, Kahneman and Tversky (1979) state that people evaluate the consequences of their decisions relative to a reference point as either gains or losses, where the negative consequence of a loss in individual utility is weighted higher relative to the positive impact of a gain in utility. Loss aversion typically leads to risk averse behavior. We integrate the single item eliciting risk attitudes adapted from the individual questionnaire of the SOEP. Risk attitude is measured by the item "Are you generally a person who is fully prepared to take risks or do you try to avoid taking risks?" on a 11-point Likert scale ranging from 0 (risk averse) to 10 (fully prepared to take risks) with an average value of 5.7 (sd = 1.84), which is quite comparable to the average value of 5.1 (sd = 2.13) of the 2012 SOEP wave. Dohmen et al. (2011) have experimentally validated this survey question and shown that it predicts actual risk-taking behaviour in experimental lottery choices.

Trust describes the relationship between a trustor and a trustee. A trust relationship exists without a contract signed solely based on a belief in the honesty and promise of another person. Coleman (1994) describe it as "the action of placing trust involves the trustor's voluntarily placing resources at the disposal of another party (the trustee), without any real commitment from that other party." Trust and trustworthiness have been extensively studied in experimental economics, and experimentally validated questions on trust and trustworthiness have been implemented in representative surveys such as the SOEP (Fehr et al. 2003).

⁸ To make both data sets comparable, we restrict the SOEP sample to regular employees working in private sector establishments with at least 20 employees (50 employees are not available as single category) excluding the primary sector.

The LPP measures trust with two of three trust items included in the German Socio Economic Panel Study, which are taken waves 2003 and 2008 of the survey (Naef /Schupp 2009). Both items are measured on a five-point Likert scale from “totally agree” to “totally disagree” and show an internal consistency of $\alpha=0.50$, which is somewhat lower than the value of 0.63 of the original three-item scale in the wave 2008 of the SOEP. Descriptive statistics of the risk attitude and trust scales are depicted in Table 7.

Table 7
Risk attitudes and trust

Construct	Item	Mean (std. dev.)	
		LPP	SOEP
Risk	Are you generally a person who is fully prepared to take risks or do you try to avoid taking risks?	5.7 (1.84)	5.1 (2.13)
Trust	Nowadays one can't rely on anyone.	3.29 (1.10)	2.64 (0.74)
Trust	On the whole one can trust people.	3.61 (0.84)	2.40 (0.65)

The items are taken from the German Socio Economic Panel Study. Risk is measured on a 11-point Likert scale and trust on a five-point Likert scale.

Justice Sensitivity

People systematically differ with respect to how they perceive injustice or potentially unfair treatment and how they react to this phenomenon (Schmitt et al., 2010). Psychologists typically differentiate between four perspectives of injustice: victim sensitivity, observer sensitivity, beneficiary sensitivity, and perpetrator sensitivity. In an influential paper in economics, Fehr and Schmidt (1999) argue that fairness concerns can be captured by measuring the extent to which people dislike disadvantageous inequity (i.e., being worse off than others) and advantageous inequity (i.e., being better off than others).

The LPP includes two justice sensitivity items taken from the eight items justice sensitivity inventory short scale survey USS-8 (Schmitt et al. 2010; Beierlein et al. 2012). The USS-8 includes two items for each of the four scales victim, observer, beneficiary, and perpetrator sensitivity. We take one item from the victim and one item from the beneficiary scale (see Table 8) that reflect disadvantageous and advantageous inequity.

Table 8
Justice sensitivity

Construct	Item	Mean (std. dev.) / Cronbach's alpha
Victim sensitivity	It makes me angry when others are undeservingly better off than me.	2.68 (1.30)
Beneficiary sensitivity	I feel guilty when I am better off than others for no reason.	2.36 (1.17)
Overall: alpha		0.56

The items are taken from the USS-8 justice sensitivity inventory (Schmitt et al. 2010) and are measured on a five-point Likert scale.

4.3 Attitudes towards the Organisation

While personnel and organizational economists have mainly focussed on behavioural outcomes and organizational performance when studying the impact of HR practices, psychologists and management researchers have put a strong emphasis on employees' attitudes towards the organization. It has been shown that employee attitudes are strong predictors for behavioural variables such as absenteeism, performance, and turnover (Meyer et al. 2002; Schaufeli/Bakker 2004; Llorens et al. 2006; Mauno/Kinnumen/Ruokolainen 2007; Rich/Lepine/Crawford 2010). The LPP comprises attitudes that likely predict individual performance (work engagement) and those that more likely predict turnover (affective commitment and job satisfaction).

Work Engagement

Work engagement is defined as a positive, affective-motivational state of fulfilment that is characterized by vigour, dedication, and absorption in the job (Schaufeli/Salanova/Bakker 2006). It represents the active allocation of personal resources towards the tasks associated with the work role (Rich/Lepine/Crawford, 2010). Work engagement comprises the three sub-scales: vigour, dedication and absorption. Vigour refers to high levels of energy and resilience, the willingness to invest effort in one's job, not being easily fatigued, and persistence in the face of difficulties. Dedication refers to a strong involvement in one's work, accompanied by feelings of enthusiasm and significance, and by a sense of pride and inspiration. Absorption refers to a pleasant state of immersion in one's work that is characterized by time passing quickly and being unable to detach oneself from the job (Schaufeli et al. 2002; Schaufeli/Bakker 2004)⁹. We note that this scale could also be useful for research in personnel economics. While personnel economists in the past had mostly focussed on extrinsic motivation of employees, more recently a

⁹ Mauno/Kinnumen/Ruokolainen (2007) note that absorption shares some conceptual similarities to the concept of flow experience, vigor to intrinsic motivation and dedication to job involvement.

literature has emerged in economics studying the role of intrinsic motivation and its interplay with extrinsic incentives when determining employee efforts (see e.g. Frey/Oberholzer-Gee 1997; Bénabou/Tirole 2003; Sliwka 2007; Ellingsen/Johannesson, 2008). As employee efforts are typically hard to measure objectively with a unified measure that is comparable across industries and jobs, a subjective scale measuring the extent to which employees are engaged in their jobs seems an important complement when studying the association between the use of HR instruments and firm performance.

In the LPP employee survey, work engagement is operationalized with the nine-item short scale of the Utrecht Work Engagement Scale (UWES-9) (Schaufeli et al., 2002; Schaufeli/Bakker 2004). Engagement is subdivided into three dimensions: vigour, dedication, and absorption. Table 9 shows the nine scale items and factor loadings. The LPP overall work engagement shows an internal consistency of $\alpha = 0.91$ (Table 9), which is very close to the α of 0.90 of the total database reported by Schaufeli and Bakker (2004). Similarly, the sub-scales have a high internal consistency of 0.71 (vigour), 0.82 (dedication) and 0.84 (absorption) all of which are comparable to the original α measures of 0.72 (vigour), 0.84 (dedication), and 0.77 (absorption).

Table 9
Work engagement short scale

Items (mean; std. dev.)	Factor loadings / Cronbach's alpha
	LPP
Dimension Vigour: alpha	0.71
At my work, I feel bursting with energy. (3.48; 0.99)	0.623
At my job, I feel strong and vigorous. (4.11; 0.83)	0.658
When I get up in the morning, I feel like going to work. (3.59; 1.16)	0.786
Dimension Dedication: alpha	0.82
I am enthusiastic about my job. (3.84; 1.01)	0.830
My job inspires me. (3.48; 1.25)	0.787
I am proud on the work that I do. (4.17; 0.97)	0.775
Dimension Absorption: alpha	0.84
I feel happy when I am working intensely. (3.96; 1.02)	0.738
I am immersed in my work. (3.73; 1.12)	0.831
I get carried away when I'm working. (3.59; 1.13)	0.852
Overall: alpha	0.91

The items are taken from the Utrecht Work Engagement Short Scale (Schaufeli and Bakker, 2004) and are measured on a five-point Likert scale.

Affective Commitment

Commitment describes the relative strength of an individual's identification with and involvement in a particular organization. The most influential concept of commitment is the three-component model (Allen/Meyer 1990; Meyer/Allen, 1991; Meyer/Allen/Smith 1993). The model distinguishes affective, continuance, and normative commitment. Even if all three dimensions describe employees' attachment to the firm, affective commitment is generally considered to be the most important dimension to predict individual turnover intention, job performance, citizenship behaviour or absenteeism (Meyer et al. 2002). Affective commitment describes employees' emotional attachment and that he or she enjoys membership in the organization¹⁰.

We apply the six-item short form to measure affective commitment to the organization introduced by Meyer/Allen/Smith (1993). This construct is a reduced but embedded scale of the original version introduced by Allen and Meyer (1990). Responses were made on a five-point Likert scale (in the original study a 7-point Likert scale was used). Table 10 reports the scale items, factor loadings, and Cronbach's alpha of the construct. The internal consistency of the affective organizational commitment scale in the LPP is alpha = .83, which is similar to the value reported in the sample used by Meyer/Allen/Smith (1993) of alpha = .82 and the alpha =.82 based on 144 studies reported in the meta study by Meyer et al. (2002).

Table 10
Items and factor loadings of affective commitment

Items (mean; std. dev.)	Factor loadings / Cronbach's alpha	
	LPP	Meyer et al. (1993)
I would be very happy to spend the rest of my career with this organization. (4.05; 1.18)	0.679	0.645
This organization has a great deal of personal meaning for me. (3.83; 1.17)	0.786	0.749
I really feel as if this organization's problems are my own. (2.98; 1.32)	0.638	0.410
I do not feel a strong sense of "belonging" to my organization. (R) (3.89; 1.21)	0.784	0.735
I do not feel "emotionally attached" to this organization. (R) (3.82; 1.21)	0.792	0.680
I do not feel like "part of the family" at my organization. (R) (3.80; 1.22)	0.719	0.735
Overall: alpha	0.83	0.82

The items are taken from the affective commitment short scale by Meyer/Allen/Smith (1993) measured on a five-point Likert scale.

¹⁰ Continuance commitment refers to employees' profit associated with continued participation and costs associated with leaving the organization and normative commitment to employees' feelings of obligation to remain in the organization.

Employee Well-being

Employee or psychological well-being is often referred to as a sub dimension of overall happiness that predict job performance (Wright/Cropanzano 2000). Wright (2005) even claims that well-being is a better predictor of job performance than job satisfaction, but evidence of this relationship is missing from meta-studies.

In the LPP, we apply the WHO-5-Well-Being Questionnaire (version 1998), a frequently used self-rated 5-item questionnaire of emotional wellbeing (Bech et al. 2003). Survey respondents rate five statements about how they have felt over the last two weeks, measured on a six-point scale from 0 “at no time” to 5 “all of the time” (Table 11). The LPP scale shows an internal reliability of 0.84.

Table 11
Items and factor loadings of WHO-5

Items (mean; std. dev.)	Factor loadings / Cronbach's alpha
I have felt cheerful and in good spirits. (2.59; 1.21)	0.834
I have felt calm and relaxed. (2.75; 1.29)	0.832
I have felt active and vigorous. (3.06; 1.34)	0.749
I woke up feeling fresh and rested. (3.14; 1.44)	0.776
My daily life has been filled with things that interest me. (2.81; 1.27)	0.722
Overall: alpha	0.84

The items are taken from the WHO-5-Well-Being Questionnaire (Bech et al. 2003 and <https://www.psykiatri-regionh.dk/who-5/who-5-questionnaires/Pages/default.aspx>) and are measured on a six-point scale.

Job and Income Satisfaction

Job Satisfaction, a domain-specific element of life satisfaction, is the subjective evaluation of an employee's well-being with respect to her current work or with aspects of her work. Economists often interpret job satisfaction as the utility of an employee's present job determined by monetary and non-monetary aspects (Hamermesh 1977; Freeman 1978). Correspondingly, income satisfaction refers to the evaluation of an employee's well-being with her income.

The LPP measures job and income satisfaction with one item for each taken from the German Socio-Economic Panel Study (SOEP). Employees assess their level of job and income satisfaction on an 11-point Likert scale ranging from 0 (completely dissatisfied) to 10 (completely satisfied, compare Table 12). Mean job satisfaction reported in the LPP is 7.56 (sd = 1.75), which is somewhat larger than the respective average in the SOEP wave 2012, with an average satisfaction of 7.0 (sd = 1.97). Mean income satisfaction is 6.67 (sd = 2.17), which is similar to the SOEP 2012 wave with mean 6.62 (sd = 2.13).

Table 12
Mean and standard deviation of the satisfaction measures

Construct	Item	Mean (std. dev.)	
		LPP	SOEP
Job satisfaction	How satisfied are you with your job?	7.56 (1.75)	7.00 (1.97)
Income Satisfaction	How satisfied are you with your income?	6.67 (2.17)	6.62 (2.13)

The items are taken from the German Socio Economic Panel Study and measured on a 11-point scale.

4.4 Behavioural Variables

Finally, the LPP gives access to variables that match actual employee behaviour to a stronger extent.

Turnover Intention

As a first step, the employees' turnover intention is elicited. Turnover intention is defined as a conscious and deliberate willingness to leave the organization, often combined with the intent to search for alternative employment (Tett/Meyer 1993). It has been shown that turnover intention is a strong predictor for actual turnover (Tett/Meyer 1993; Griffeth/Hom/Gaertner 2000).

The LPP measures the probability that an employee stays with the current employer with the single item "How many times in the past 12 months have you thought about changing your job?" (Table 13). The answer categories on a five-point Likert scale ranged from 1 (never) to 5 (every day), with a mean value of 1.61 (sd = 0.93). Such a single-item measure of turnover intention is usually correlated to a weaker extent to job satisfaction and commitment as compared to a longer scale but is still significantly correlated to employee attitudes (Tett/Meyer, 1993).

Real turnover

Real turnover can be measured in two ways in the LPP. First, starting with the second wave of the employee survey, the surveyed employees are asked whether they still work in the same firm. If this is not the case, they respond to a specific "job mover" questionnaire collecting detailed information on their job changes. Moreover, turnover can be very accurately measured using the linked Integrated Employment Biographies (IEB) from the administrative data. The IEB are usually available with a time lag of two years and updated annually. The IEB includes the exact time spell of all employment spells at the current and each prospective employer. Since the social security records are the source for pension or unemployment claims, this administrative source is very accurate. Moreover, actual turnover can be tracked even in the years after the LPP survey has been conducted.

Sickness absence

Sickness absence refers to any unscheduled absence from the workplace due to illness, i.e. scheduled absence such as holidays are not considered. In the LPP, we integrate one single item on sickness absence taken from the German Socio-economic panel study (SOEP) which captures sickness absence as the days an employee had been unable to work during the previous 12 months. The mean value is 11.65 (sd = 24.32) and the median value is 4 days. The variable ranges from 0 to a maximum of 230.

Table 13
Behavioural variables

Construct	Item	Mean (std. dev.)
Turnover Intention	How many times in the past 12 months have you thought about changing your job?	1.61 (0.93)
Sickness absence	How many days were you unable to work due to illness in the past 12 months? Please state the total number of days, not just the number of days for which you had an official note from your doctor.	11.65 (24.32)

The turnover intention item is measured following Bluedorn (1982), measured on a five-point scale and the sickness absence item is taken from the SOEP.

5 Correlation between the Scales

Table A1 in the appendix displays the means, standard deviations, and pairwise correlations of all factors introduced in section IV. The correlations show the expected signs. The strongest correlations are between income satisfaction and fairness (0.62) and supervisory support and fairness (0.57). Hence, all variables describe reasonable distinct concepts.

6 Further Development and Data Access

This paper introduced the LPP data and describes the first wave of the employer and employee survey, both collected in 2012/ 2013. But the LPP is designed as a longitudinal linked employer-employee data set. The second wave of the employer and employee survey was collected in 2014/ 2015. The project stakeholders agreed to support and fund a third wave that will be collected in 2016 and discuss continuing the data collection in the future. The majority of the survey questions both in the employer and employee data set are scheduled to be asked in an identical way in each wave in order to establish the possibility for long-term comparisons and panel analyses. A small fraction of items will be modified in each wave in order to focus on relevant topics that are present at the time of each data collection. Hence, the LPP will constitute a detailed and longitudinal data source for HR researchers and personnel economists now and in the future.

The first wave of the LPP has been available for researchers since spring 2015. The second wave will presumably be available in spring 2017. Researchers can apply to

use the data at the Research Data Centre of the Institute for Employment Research in Nuremberg.¹¹ There are two ways to access the data: via on-site use at one of the Research Data Centres in Germany or around the world or via remote data access. On-site use requires that the researcher travels to a Research Data Centre but it allows him or her to directly assess the data. Remote data access is possible after an initial on-site access to get acquainted with the data. It requires sending program codes to the Research Data Centre, which then returns the corresponding result files. In both cases, the Research Data Centre is required to double check the data protection regulations before releasing the final files to the researchers.

7 Conclusion

The main advantage of the LPP lies in the integration of standard measures of job characteristics and job perceptions, personal characteristics, attitudes towards the organisation and behavioural variables in a longitudinal, representative linked employer-employee data set. This integration allows researchers, for example:

- to analyse the association between a broad set of specific instruments used on the firm level and employee attitudes and aspects of their behaviour,
- to study the role of context for well-established relationships between HR instruments and employee attitudes,
- to illustrate the time variability of HR management practices,
- and to go beyond mere cross-sectional correlations and thus come closer to the ideal of establishing causal effects of HR practices.

The last two points are more likely to be addressed when the longitudinal dimension of the data set becomes available in the near future. Research focussing on a potential context dependency of well-known relationships is already feasible. Empirical researchers in the field of organisational behaviour or personnel economics often have to rely either on rather broad individual surveys like the SOEP, PSID or the NLSY that cannot be matched to firm-level information or on small data sets limited to specific firms or occupations.¹² This usually raises the question whether the results can be generalized to other environments and to what extent the specific context matters. The LPP should be well suited to investigate such questions. First, the LPP is representative for private sector firms in Germany, which allows, for instance, a comparison between industries and according to firm size. Second, the LPP links the employer and employee dimension and allows for

¹¹ The application forms are available at http://fdz.iab.de/en/Integrated_Establishment_and_Individual_Data/lpp/Data_Access.asp X.

¹² An exception is the British Workplace Employment Relations Study (WERS). However, it is not possible to link individual data from WERS to other individual-level data sources such as administrative data, as possible in the LPP. Furthermore, no information is elicited in the WERS survey of employees on, for instance, personality traits or scales such as commitment and engagement.

investigating differences between several HR and business practices and employees' perceptions about these practices. Third, the LPP can be linked to administrative information about actual salaries and employment histories. Fourth, the LPP uses several survey scales that are well established in the literature.

The LPP of course also has some limitations. The employee questionnaire contains a number of variables that include only a subset of standard scales such as the work design variables, clarity of organisational goals or supervisory support. The reason for shortening well-established scales or choosing specific items is found in the specific construction of the employee survey. The employee survey was collected by a professional survey institute. This has the advantage of a high data quality and response rate but also entails high costs per interview. Hence, the project budget restricts the number of items and the items were chosen in a way that they are likely to cover all relevant areas of the respective concepts. Moreover, the telephone survey took about 30 minutes on average – further lengthening the survey probably would have reduced the response rate.

Moreover, of course employee level information is mostly based on subjective perceptions and the data set cannot directly provide objective measures of employee performance. However, we note that it is a future aim at the IAB which administers the survey to link the data set also to financial databases allowing to use balance sheet data to measure firm success.

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Appendix

Table A1
Pearson pairwise correlations among variables

Variable	Mean	SD	1	2	3	4	5	6	7	8
1 Affective Commitment	3.73	0.89								
2 Work Engagement	3.77	0.80	.50**							
3 Job satisfaction ^a	7.56	1.75	.50**	.51**						
4 Risk attitude ^a	5.74	1.84	.04*	.15**	.11**					
5 Trust	3.45	0.79	.23**	.16**	.22**	.05**				
6 Clarity of organizational goals	3.73	0.96	.35**	.30**	.35**	.06**	.15**			
7 Supervisory support	3.69	0.89	.41**	.40**	.49**	.06**	.21**	.50**		
8 Fairness	3.64	0.80	.46**	.38**	.52**	.02*	.26**	.42**	.57**	
9 Turnover intention ^b	1.61	0.93	-.50**	-.35**	-.52**	-.004	-.18**	-.30**	-.37**	-.47**
10 Extraversion	3.71	0.73	.11**	.21**	.13**	.20**	.06**	.12**	.11**	.09**
11 Conscientiousness	4.38	0.48	.10**	.27**	.14**	.06**	-.05**	.16**	.14**	.09**
12 Neuroticism	2.73	0.77	-.08**	-.16**	-.21**	-.15**	-.19**	-.11**	-.14**	-.18**
13 Openness to experience	3.67	0.63	.11**	.24**	.08**	.22**	.05**	.10**	.09**	.05**
14 Agreeableness	4.07	0.58	.10**	.17**	.13**	-.03**	.13**	.14**	.18**	.14**
15 Absenteeism ^c	11.6	24.3	-.09**	-.08**	-.14**	-.03**	-.08**	-.02	-.06**	-.10**
16 Income satisfaction	6.67	2.17	.39**	.28**	.44**	.03*	.23**	.25**	.30**	.62**
17 Work-family conflict	2.36	1.07	-.19**	-.20**	-.32**	.01	-.17**	-.19**	-.30**	-.30**
18 Family-work conflict	1.49	0.62	-.13**	-.10**	-.16**	.03**	-.12**	-.11**	-.12**	-.15**
19 Employee well-being ^d	4.13	1.02	.22**	.40**	.34**	.15**	.19**	.20**	.25**	.27**
20 Justice sensitivity	2.52	1.03	-.07**	-.05**	-.11**	-.01	-.11**	-.03**	-.05**	-.14**

Variable	9	10	11	12	13	14	15	16	17	18	19
10 Extraversion	-.04**										
11 Conscientiousness	-.06**	.26**									
12 Neuroticism	.15**	-.17**	-.08**								
13 Openness to experience	.04**	.33**	.25**	-.03**							
14 Agreeableness	-.09**	.10**	.30**	-.13**	.15**						
15 Absenteeism ^c	.08**	.01	.02	.11**	.02	.01					
16 Income satisfaction ^a	-.40**	.03**	-.01	-.13**	-.002	.04**	-.11**				
17 Work-family conflict	.32**	-.04**	-.06**	.20**	.02	-.13**	.07**	-.21**			
18 Family-work conflict	.16**	-.07**	-.15**	.12**	-.01	-.13**	.02	-.10	.37**		
19 Employee well-being ^d	-.24**	.19**	.14**	-.30**	.17**	.13**	-.17**	.19**	-.24**	-.11**	
20 Justice sensitivity	.10**	-.05**	-.04**	.20**	.004	-.07**	.01	-.14**	.11**	.12**	-.09**

Note. *n* ranges from 7,087 to 7,501. * $p < .05$, ** $p < .01$. All items range from 1 to 5 except those with ^a ranging from 0 to 10, ^b Reverse coded: answer categories here range from 1 (never) to 5 (every day), ^c counting the number of sick days, ^d ranging from 1 to 6. Source: LPP employee survey 2012.

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