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Article

Commuting Stress-Turnover Intention Relationship and the Mediating Role of Life Satisfaction: An Empirical Analysis of Turkish Employees

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Abstract: Using hierarchical regression analysis within a mediation model framework, the present study explores direct and indirect (through life satisfaction) causal impacts of commuting stress on turnover intention of employees from 29 business organizations in six populous cities of Turkey. A semi-random heterogeneous sample of 214 employees with different demographics was surveyed in winter and summer times for also capturing seasonal variations of variables. The results supporting the partial mediating role of life satisfaction in the positive relationship between commuting stress and turnover intention infer that commuting stress induces turnover intention directly and indirectly (by reducing life satisfaction). The analysis of variance reveals that demographic characteristics of employees such as gender, marital status, age, and family size together with commuting type and commuting duration matter for their perceived commuting stress, life satisfaction, and turnover intention levels. Commuting stress perception is relatively higher in summer time whereas the other magnitudes are consistently and significantly invariant between two survey implementations. The study concludes with a call for the consideration of commuting stress and life satisfaction together with environmental and demographic factors when analyzing the antecedents and consequences of employee turnover intention.

Keywords: commuting stress; turnover intention; life satisfaction; mediation model; demographics; ANOVA; hierarchical regression; bootstrap; Turkey

1. Introduction

Given the negative consequences of employee turnover on organizations in terms of loss of institutional memory and costs of rehiring and retraining (Moynihan and Pandey 2008), determining the antecedents of employees' propensities to stay or leave their organizations has been an ongoing goal of both employers and researchers. In the organizational turnover literature, studies can be broadly distinguished between two strands that one research group has focused on the causes of employee intention to stay (e.g., Igbaria et al. 1994) whereas the other strand has immensely coped with what motivate employees to leave their organizations (e.g., Firth et al. 2014). There is also an integrative and expanded research interest combining (e.g., Ghosh et al. 2013) and comparing (e.g., Cho et al. 2009) the staying and leaving intentions of employees. Moreover, segregating employee turnover into turnover intention and actual turnover (e.g., Cohen et al. 2016) as well as voluntary and involuntary turnover (e.g., Shaw et al. 1998) is also applied in the relevant literature.

Much of the global turnover research has associated employee voluntary turnover intention (hereinafter TI) with a wide array of predictors including work environment, job quality, job satisfaction, organizational commitment, organizational citizenship, employee-organization value fit, organizational support and social networks, together with salient demographics such as length of service, age, education, occupational position, marital status and family structure, as well as employees' major personality traits including openness, conscientiousness, extraversion, agreeableness, neuroticism, self-esteem, risk-aversion or risk-taking, etc.

Life quality of employees determined by miscellaneous work and nonwork factors may influence TI through different channels. Even job satisfaction is widely premised as a constant component of

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employee life satisfaction (hereinafter LS) (Rice et al. 1980; Rode 2004), in fact, it is determined by physical and mental health conditions. Eventually, LS levels of employees depend on a variety of composite indicators including payment, housing, relationships with others, education, health, environmental quality, trust in others, services they are provided, safety and work-life balance those jointly determine the extent to which employees comparatively perceive how better lives they have (OECD Better Life Index 2018).

On the other hand, there is a stylized fact that today's employees from all around the world spend a considerable and ever-increasing proportion of their time while commuting to and from work-related destinations which may increase occupational stress and lower the quality of life and organizational attachment of employees. Commuting outstands as one of the most important factors upon employees' decisions about where to work and live that directly affect TI. Consistently, a relatively newer interest strand in business and management literature has recently started to examine the linkage between employee commuting stress (hereinafter CS) and TI (Koslowsky et al. 1995; Amponsah-Tawiah et al. 2016) as well as CS's impacts on workplace aggression (Hennessy 2008), overall happiness (Olsson et al. 2013), burnout (Amponsah-Tawiah et al. 2016), absenteeism (Costal et al. 1988), and life satisfaction (Lachmann et al. 2017).

While controlling the mutual relationships between TI and its predictors, this literature has been predominantly restricted to include only a few key demographics neglecting the climate and weather conditions that may alter perceived CS and its impacts on employee behaviors (Lee et al. 2014; Ettema et al. 2017). However, given the increases in the commuter assignment and commuting stress with the undesired organizational outcomes, relevant studies surprisingly have not reflected the importance of CS. Moreover, the relationship between CS and TI is seen neglected especially in developing countries like Turkey where transportation services and infrastructures are not that commuter-friendly and telecommuting is not pervasive compared to those in developed countries.

According to a large-sample global study conducted by PageGroup (2018) in 2016 across European countries, Turkey is one of the countries where employees experience lengthiest and most stressful commutes. Even Turkey has been recently improving transportation infrastructures for all commuting modes, these yet seem to be insufficient to meet all demands of commuters especially in populous cities like İstanbul. Given these, CS and its organizational consequences seem to be ignored in studies on Turkey case. Addressing the research gap of the literature about direct and indirect causal cycle between TI, CS, and LS in developing countries, this study is one of first initiatives aiming to explore the direct and indirect (through LS) causal impacts of CS on TI in case of Turkey, where weather conditions also change considerably across cities and seasons. The remainder of the study is organized as follows: The second section is devoted to the conceptualization of variables. The third section introduces the methodological procedure that covers hypotheses and model development, survey design, participants' demographics, and variable measures. The fourth section represents the analysis process and reports corresponding results. After key findings and relevant practical implications are discussed in the fifth section, the final section provides several suggestions for future research based on the limitations of the study.

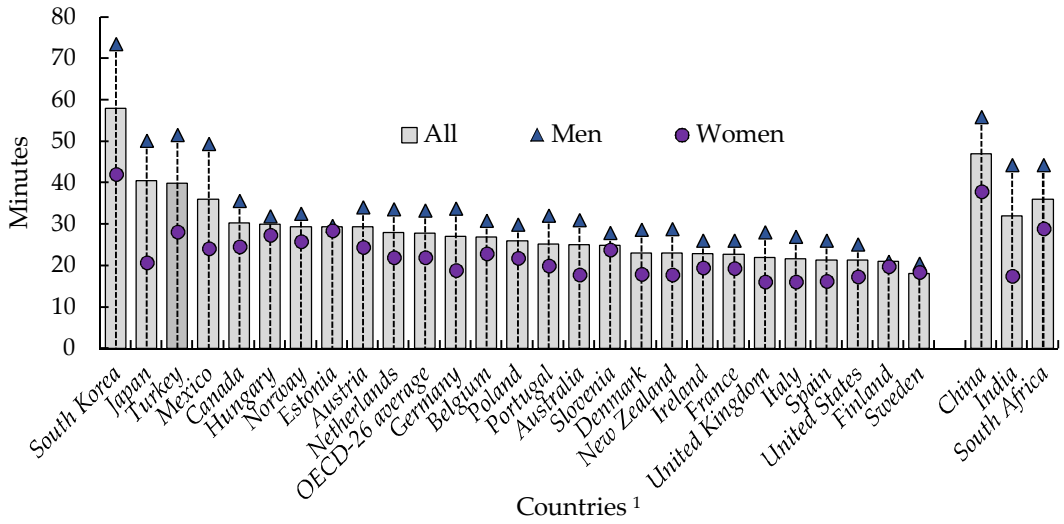
2. Conceptualization

2.1. Commuting Stress

Changes in the work and employee characteristics, the shift of jobs to suburban areas, increasing commuter assignments with deadlines, and greater availability of customized vehicles have significantly increased commuting by private automobiles. This has not resulted in a reduction in other types of journeys that the use of public transportation modes has also increased. As a result, CS, whether associated with driving on congested roadways or with strains in public transportation particularly in crowded cities has become one of the flourishing multidisciplinary interest domains in the health and managerial sciences (Costal et al. 1988; Koslowsky et al. 1995).

It is logically expected that employees in the industrialized countries those have populous cities and metropolises with business clusters will have higher CS. But global surveys tend to confute this

prediction that CS is not directly related to development stages and densely populated urban areas of countries (PageGroup, 2018). A cross-country presentation of OECD (OECD Family Database, 2018) provided in Figure 1 demonstrates that the average amount of time which individuals spend by traveling to and from work differs considerably across OECD countries and China, India and South Africa. In South Korea, for example, employees on average spend around one hour while commuting. South Korea is followed by other Asian countries such as China and Japan. These countries also have the highest gender differences that male employees spend much more time than women do while commuting. Turkey, where employees spend 40 minutes on average per a typical working day, is among countries with the longest commuting time. Furthermore, daily commuting time of male employees (52 minutes) is even much more than that of female employees (28 minutes) in Turkey. In spite of the indications (e.g., Costal et al. 1988) that commuting durations can be independent of distances as a result of faster commuting modes, both tend to be a stress factor for working commuters. In addition to lengthy commuting destinations, global surveys also reveal that employees in Turkey subsequently experience a high CS as well (PageGroup, 2018).



[1] Countries are ranked by commuting time for all. Data years range between 1999-2014 over countries.
Source: OECD Family Database (2018).

Figure 1. Average daily commuting time in OECD countries and China, India and South Africa

In the literature covering CS, one of the major constraints is the incompatible conceptualization of CS. We define CS as *the perceived stress caused by undesired consequences of traveling to and from work*. The sources of CS are hours lost from both work and leisure activities, costs of excessive fuel consumption, exhaustion, air pollution, honking noise, driver aggression, and accidents. In connection with employee behaviors, CS is associated with both observable (e.g., lateness, sickness, absence, workplace aggression, lower performance, and increased turnover) and latent consequences (e.g., decreased job satisfaction, life satisfaction, motivation, happiness, creativity, and competitiveness).

2.2. Commute Spillover into Turnover Intention

TI is the extent to which employees are induced to intend to quit their organizations and/or employers. Tett and Meyer (1993) defined TI as "a conscious and deliberate willfulness to leave the organization". It needs to be noticed that in the TI literature, even there are also contradicting findings (e.g., Jung, 2010; Cohen et al. 2016), it has been usually assumed that voluntary leaving intentions and actual leaving behaviors of employees are strongly correlated, and thus, can be used interchangeably (Bluedorn, 1982).

Although the relevant literature reveals that many other factors are also related to TI (Mobley et al. 1979; Bluedorn, 1982; Alfes et al. 2012), turnover models have been immensely developed around the organizational commitment based on the widely-cited papers including that of Allen and Meyer (1990). Factors affecting TI can be broadly classified into three major groups as environmental, individual, and organizational (Moynihan and Pandey, 2008) that are segregated in Table 1 and Table 2. There are also strong interactions between these classifications that matter for exploring what motivate employees to leave or to stay. Likewise, theoretical and empirical settings of TI result in different implications for public/private and profit/nonprofit distinctions of organizations.

Table 1. Organizational causes of TI and their presumed effects

Aspect	*Statement*	*Effect*
Payment	*The money paid to employees for their services and values they add.*	–
Integration	*Having close friends and good relationships with colleagues at work.*	–
Internal communication	*The extent to which employees have efficient and sustained communication with colleagues at work.*	–
External communication	*The extent to which employees have efficient and sustained communication with their counterparts in other organizations.*	+
Centralization	*The extent to which organizational decisions are often made by employers or by empowered and privileged several managers.*	+
Routinization	*The extent to which job-related responsibilities are repetitive.*	+
Distributive justice	*The prevalence of merit- and performance-based promotion system.*	–
Upward mobility	*The possibility and availability of movement between different status and career levels in organizations.*	–
Job satisfaction	*The extent to which employees are satisfied with what they do.*	–
Work commitment	*The extent to which employees feel committed to their work.*	–
Occupational status	*The extent to which employees hold occupational status.*	–

Source: Author's adaptation from Martin (1979) and Moynihan and Pandey (2008).

Environmental factors are about general economic conditions. When local economic conditions are better and the business agents perform effectively, employees become more confident that they can easily find another job. About individual differences influencing the turnover propensities of employees, the most investigated demographics of employees are gender, age, and experience. These demographics are usually used for controlling the impacts of examined variables on TI. On the relationships between organizational characteristics and TI, the most part of research focuses on the human resource management practices. There is a strong evidence of the contribution of promotion and upward mobility opportunities to retain the employees in the organizations. On the effects of training and development services, evidence of the extant studies is unclear that there are contemporary studies with conclusions of training and development services might encourage employees both to leave and stay in organizations (Demiral, 2017). On the employee-organization interactions, job satisfaction measured by many indicators such as payment, human resource management practices, and employee empowerment is commonly recognized as a good estimator of TI (Martin, 1979; Moynihan and Pandey, 2008).

In line with the salient approaches of global researchers, turnover studies with samples covering of Turkish employees have predominantly examined the organizational, environmental, and individual factors as predictors of TI (Wasti, 2003; Chen et al. 2012; Ertürk, 2014; Maden and Kabasakal, 2014; Masum et al. 2016; Akgunduz and Bardakoglu, 2017). In these studies, human resource management practices, cultural values, job involvement, organizational commitment, organizational support, trust, prestige, identification, employee empowerment and job satisfaction alongside personality traits and demographic profiles are associated with TI of diverse samples of Turkish employees.

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Table 2. Environmental and individual causes of TI their presumed effects

Aspect	*Statement*	*Effect*
Opportunity	*The availability of alternative occupational roles and job opportunities offered by other organizations in the working environment.*	+
Social networks	*Intra-organizational social network*	–
	Inter-organizational social network	+
	Social/community networks	+
Commuting	*Location of work (distance to home)*	+
	Location of home (distance to work)	+
Length of service	*The time that employees have been working at the company.*	–
Age	*Elder employees are more inflexible and thus loyal to their organizations.*	–
Education and training	*Although more educated and trained employees are expected to be more flexible, education and training qualifications should be considered.*	+
Gender and marital status	*Should be considered together with other demographics and cultural values.*	+/–
Work type	*The effects of working as blue or white collar are inconclusive.*	+/–

Source: Autor's compilation based on the predominant evidence of previous studies.

2.3. Life Satisfaction

LS is a cognitive appraisal of the overall degree of satisfaction that employees feel about their entire lives. A high level of LS is desirable for employees since life-satisfied people tend to feel good and happy about themselves and their lives, treat others better, deal with problems and issues of work and personal life productively and effectively, and be more open-minded and creative in their thinking (Pasupuleti et al. 2009). LS is a composite indicator reflecting the impacts of personality, work and nonwork background, and satisfaction with domains of work, home and social environments (Hart 1999; OECD Better Life Index, 2018). There has been a causal expectation that low LS spills back over to the workplace in the form of high TI (Pasupuleti et al. 2009). In the study, we link this expected nexus to another expected negative relationship between CS and LS.

According to OECD Better Life Index (2018), even Turkey has made considerable progress in improving the quality of life of its citizens over the last two decades, it performs badly in many indicators of well-being compared to other OECD countries. In OECD's current (July 2018) better life measurements, Turkish employees rated their general LS level 5.5 on average (within a scale from 0 to 10) that was much lower than the OECD average of 6.5.

Relying on its strong relationship with LS premised by earlier research such as that of Filiz (2014), studies on Turkey vastly associate LS with job satisfaction. Thus, relevant literature with cases of Turkish employees has been restricted to job satisfaction-turnover nexus ignoring the nonjob and nonwork ingredients of LS. Addressing this missing part of LS and its neglected impacts on TI, in the study, we included the expected mediating role of LS in the indirect impacts of CS on TI.

2.4. Demographic and Atmospheric Factors

Studies commonly conclude that the separate antecedents and consequences of CS, LS, and TI vary over both individual and work demographics. Therefore, the survey of the study also contained a set of questions about respondents' age, gender, marital status, number of children, education level, organizational/occupational tenure, job status and managerial position. Again, because commuting duration and commuting type can induce stress levels and moods of commuters (Evans and Wener 2006; Feng and Boyle 2014; Brutus et al. 2017) they were also included in the survey to explore the predicted variations over the variables.

Besides, as those of all people, employees' positive and negative moods and behaviors are apparently influenced by atmospheric factors such as extreme rain, snow, heat, and wind. These factors may alter the influences of the commuting type and commuting duration (Ettema et al. 2017).

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Climate impacts on employees is a relatively new research field that has a huge gap in the management and organization literature. Therefore, the current study also aims to reflect these impacts. To this end, the same sample of the study was surveyed twice in the winter time and summer time and mean-scores were compared to control for the climate impacts. The conventional wisdom which predicts that better (worse) weather conditions ease (distress) employees' everyday work life is weakened by a contradicting premise such as that of Lee et al. (2014) suggesting that bad weather increases individual productivity since they tend to focus more on their work than on alternative outdoor activities. However, in the case of the present study, regardless of how employee commute, especially extreme weather conditions are expected to be leading to an increase in CS.

3. Methodological Framework

3.1. Hypotheses and Model Development

Within a three-variable system, the study has four hypotheses to be tested:

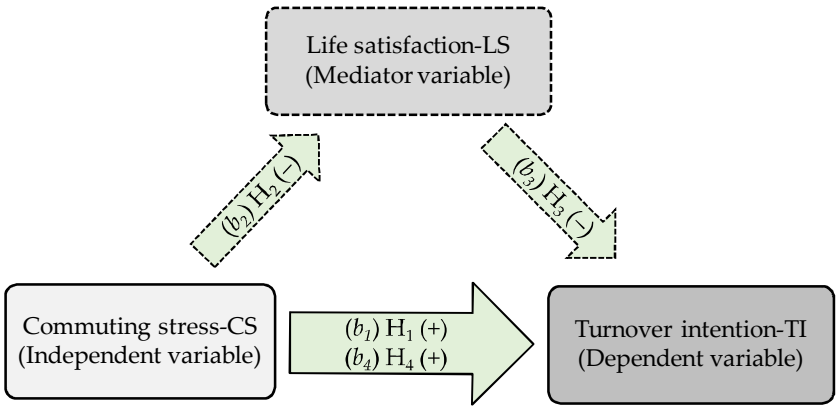
Hypothesis 1: Higher CS directly increases TI.

Hypothesis 2: Higher CS directly reduces LS.

Hypothesis 3: Lower LS directly increases TI.

Hypothesis 4: Higher CS also increases TI indirectly by reducing LS directly and simultaneously.

Because of a strong prediction about other variables can intervene in the relationship between CS and TI, hypothesis 4 is premeditatedly confined to the partial mediating role of LS. The causal chain posited by these four hypotheses depicts a simple mediation model as illustrated in Figure 2.



Direct effect: (b_1); Mediated effect: $(b_2)+(b_3)$; Indirect effect: (b_3); Total effect: $(b_1)+(b_3)=(b_4)$

Figure 2. The hypothesized mediation model for the study.

In this regression-based mediation model, LS functions as a mediator variable when it meets the following standard conditions (Baron and Kenny, 1986; Hayes, 2013): i) Variations in CS significantly explain the variations in TI, ii) variations in CS significantly explains the variations in LS (i.e., presumed mediator), iii) variations in the LS significantly explains variations in the TI, and iv) when the causal paths of *CS→LS→TI* are controlled, a previously significant *CS→TI* nexus changes. With regard to the last condition, when the previous relationship becomes zero or insignificant, we have strong evidence for a dominating single mediator. When it is found nonzero but significantly lower than the previous value, this indicates the operation of multiple mediating factors.

Reflecting the hypothesized causes, we have following four regression models to be estimated:

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$$TI_i = a_1 + b_{1i}CS + e_{1i} \quad (1)$$

$$LS_i = a_2 + b_{2i}CS + e_{2i} \quad (2)$$

$$TI_i = a_3 + b_{3i}LS + e_{3i} \quad (3)$$

$$TI_i = a_4 + b_{4i}CS + b_{5i}LS + e_{4i} \quad (4)$$

$$(i = 1, 2, \ldots, 214 = N)$$

where, as previously symbolized, *TI* is the turnover intention, *CS* is the commuting stress, *LS* is the life satisfaction levels of employees. The parameters, a_1, a_2, a_3, and a_4 are the regression constants whereas e_1, e_2, e_3, and e_4 are the error terms of regressions. The coefficients, b_1, b_2, b_3, b_4, and b_5 are to be estimated for testing the hypotheses. Finally, the *i* indices denote the cross-section units, i.e., 214 employees who participated in the survey of the study.

In order to check for the existence of mediating cycle, these regression models need to be estimated gradually which implies the hierarchical regression analysis[1]. When these stepwise estimations yield significant b_1, b_2, and b_3 and insignificant or zero b_4 it refers to a complete (full) mediation whereas the result of $|b_4|<|b_1|$ provides evidence for a partially mediated model (Baron and Kenny, 1986) where the latter is more expected in our case.

3.2. Participants and Survey Design

The empirical part of the study is based on a dataset collected through a two-wave survey conducted among 214 heterogeneous employees from 29 dissimilar business organizations operating in Turkey. The surveys were carried out among companies in relatively populous cities, namely İstanbul (most populous city), Ankara (capital city), İzmir, Adana, Antalya, Mersin. Especially the last three cities those are located on the Mediterranean coast can be extremely hot and crowded in summer time. The survey was designed to appraise both the experiences and the perceptions of employees on CS, LS, and TI.

Printed surveys asked respondents to rank the degree to which they agree or disagree with the given statements using a seven-point Likert-type scale: (1) *disagree strongly*, (2) *disagree moderately*, (3) *disagree slightly*, (4) *neither agree nor disagree* (neutral), (5) *agree slightly*, (6) *agree moderately*, (7) *agree strongly*. The survey language was Turkish that had been professionally translated and sometimes, for better understanding, re-interpreted from English studies in the relevant global literature. In the survey administration process, first, cities and sectors determined. Then, around 40 business organizations were targeted. Human resource managers of these 40 businesses were contacted but 29 of them accepted to benevolently deliver surveys. Finally, surveys were sent and responses received by mail. When necessary, 29 voluntary managers were interviewed by face-to-face meeting and phoning or both. These managers were also willingly responsible for administrating the survey in their organizations and therefore, overall process refers to a snowball-type sampling that the author has not known and not even seen any of participants but associate managers.

After the first surveys that participants filled in winter time (December 2017-February 2018) returned completely in March 2018, the same participants were asked to fill the same surveys again in June 2018 (as a proxy of summer time) before the beginning of summer vacation which typically covers July-September period in Turkey[2]. Each of filled surveys was coded and two responses of each participant were subsequently matched.

The descriptive statistics about commuting type/commuting duration, characteristics of businesses and demographics of respondents are respectively reported in Table 3, Table 4 and Table 5. As seen in Table 3, about 47% of respondents reported that they were commuting by their private

[1] Alternatively, mediation studies have been also using structural equation modeling which combines factor analyses, path diagrams and system of linked regression equations to capture complex and dynamic relationships within a web of observed and unobserved (latent) variables that can be both dependent and independent variables simultaneously. In our case, because there were only three variables and there existed a clear distinction between dependent and independent variables with causal relationships rather than casual linkages, the hierarchical regression analysis was more appropriate.

[2] This vacation congestion is another cause of the increase in CS of summer workers in especially coastline cities.

cars those are followed by carpooling (19%) and public transportation modes (18%). 50 of 214 employees (23%) stated that they were spending about 40-60 minutes while traveling between workplace and homeplace per working day.

Table 3. How and how long participants usually commute (*regarding last 2 years*) (*N:214*)

Commuting type						
Driving alone	Carpooling	Public transportation	Walking	Bicycle/ motorcycle	Telecommuting	Total
100	*41*	*39*	*21*	*2*	*11*	*214*
47%	*19%*	*18%*	*10%*	*1%*	*5%*	*100%*
Roundtrip duration of commuting (in minutes)						
20–	20-40	40-60	60-80	80-100	100+	Total
48	*42*	*50*	*34*	*19*	*21*	*214*
22%	*20%*	*23%*	*16%*	*9%*	*10%*	*100%*

As seen in Table 4, reflecting the actual business distribution in Turkey, the majority of 29 businesses was those of operating in İstanbul (14) and those that are from low-tech basic manufacturing sectors (16) such as food/beverages and textiles. The numbers of participants from İstanbul and manufacturers are respectively 110 (51%) and 113 (53%). As it can be followed from Table 5, the demographics vary randomly. The numbers of male (135) and married (143) respondents and those who have a child (131) prevail in the sample.

Table 4. Characteristics of 29 businesses (*N:214*)

Category	Group	No. of businesses (and %)[1]	No. of respondents (and %)[1]
Business sector	*Manufacturing*	*16 (55)*	*113 (53)*
	Service	*7 (24)*	*60 (28)*
	Trade	*6 (21)*	*41(19)*
Location (City)	*İstanbul*	*14 (48)*	*110 (51)*
	Ankara	*5 (17)*	*36 (17)*
	İzmir	*4 (14)*	*29 (14)*
	Adana	*2 (7)*	*13 (6)*
	Antalya	*2 (7)*	*14 (7)*
	Mersin	*2 (7)*	*12 (6)*
Business size (no. of total employees)	*Small: 5-19*	*7 (24)*	*20 (9)*
	Medium: 20-99	*11 (38)*	*79 (37)*
	Large: 100+	*11 (38)*	*115 (54)*

[1] Because of rounding to the nearest whole, some percentages cannot add up to 100.

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Table 5. Demographics of respondents (*N:214*)

Category	Group	Frequency	%
Age	*20-29*	*42*	*20*
	30-39	*69*	*32*
	40-49	*60*	*28*
	50+	*43*	*20*
Gender	*Male*	*135*	*63*
	Female	*79*	*37*
Marital status	*Single* [1]	*71*	*33*
	Married	*143*	*67*
Number of children	*None*	*83*	*39*
	1	*41*	*19*
	2	*62*	*29*
	3 and more	*28*	*13*
Formal education level	*Elementary school degree*	*24*	*11*
	High school degree	*79*	*37*
	Bachelor's degree	*83*	*39*
	Master degree	*18*	*8*
	Doctoral degree	*10*	*5*
Time in current job (job tenure)	*2-year or less*	*36*	*17*
	3-5 years	*66*	*31*
	6-8 years	*54*	*25*
	9 and more years	*58*	*27*
Time at company (organizational tenure)	*5-year or less*	*78*	*36*
	6-10 years	*80*	*37*
	11 and more years	*56*	*26*
Job status	*Permanent*	*186*	*87*
	Contract	*28*	*13*
Managerial position	*White collar* [2]	*119*	*56*
	Blue collar [3]	*95*	*44*

[1]Divorced, separated or widowed participants were included in the single people group.
[2]White-collar employees are those who usually perform job duties in an office setting.
[3]Blue-collar employees are those who usually perform labor jobs and typically work with their hands.

3.3. Measures

In this section, survey items and their factor loadings are presented. In the factor analysis, items with low factor load (<0.50), high cross-loading (>0.50), and poor (<0.50) correlation with total factor were removed. Cronbach's alpha with a threshold of minimum 0.70 was considered as a sufficient measure of reliability and consistency of the scales.

3.3.1. Employees Commuting Stress (CS)

CS was measured with a 10-item instrument. The CS items shown in Table 6 are related to the extents to which employees suffer from commuting and perceive that commuting is a source of stress. The scale's alpha reliability was 0.81.

Table 6. Final items of CS scale and their standardized factor loadings

Items	Factor loading
It takes me longer than necessary to commute to work in the morning.	0.83
It takes me longer than necessary to commute back home after work.	0.80
I am unable to avoid heavy traffic on my way to work.	0.72
I am unable to avoid heavy traffic on my way back home after work.	0.76
I have to leave home earlier than I would like because of traffic congestion.	0.68
Traffic congestion is a frequent inconvenience.	0.65
My journey to and from work is often interrupted by traffic signals.	0.71
I am not satisfied with my journey to and from work.	0.80
My journey to and from work is unpleasant.	0.87
I worry about my journey to and from work due to traffic accidents.	0.66

Source: Excerpted from Amponsah-Tawiah et al. (2016).

3.3.2. Employee Turnover Intention (TI)

TI was measured with items that were related to both TI itself and the reverse of organizational commitment. In the related studies, TI is vastly measured with statements indicating the time when employees intend to leave such as "in the next few (1, 2, 3, etc.) months and/or years I intend to leave this organization" (Kim and Stoner 2008; Amponsah-Tawiah et al. 2016). However, in our case, managers warned us that these statements would hinder employees to be honest and thus, it was a better way to focus on the intention to stay rather than to leave their organizations. Therefore, we avoided stating a specific time for turnover and we measured TI scale indirectly and adversely by providing statements about commitment. Finally, we had a 7-item TI scale as shown in Table 7 with a resulting alpha coefficient of 0.79. Here, even the items were found having high factor loads, because the employee could have hidden their real intentions, the psychometric properties of especially this scale are subject to be interpreted cautiously.

Table 7. Final items of TI scale and their standardized factor loadings

Items	Factor loading
If I had the chance, I would be working for another organization.	0.83
I will probably look for other organizations to work in the near future.	0.77
I have never thought of leaving this organization[1].	0.84
I feel a 'strong' sense of belonging to my organization[1].	0.75
I feel 'emotionally attached' to this organization[1].	0.79
I am loyal to this organization[1].	0.73
I really feel as if this organization's problems are my own[1].	0.69

[1]Reverse-coded item

Source: The first two items were developed by the author whereas the reverse-coded items were adapted from Allen and Meyer (1990).

3.3.3. Employee Life Satisfaction (LS)

OECD Better Life Index (2018) initiative lists 11 components of LS including i) housing conditions and spending, ii) household income and financial wealth, iii) job quality, iv) social support network, v) education, vi) environment, vii) involvement in civic engagement and democracy, viii) health, ix) happiness, x) safety, and xi) work-life balance. Reflecting each of these aspects, in our LS measurement we have 11 items seen in Table 8. The Cronbach alpha for this scale was found 0.77.

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Table 8. Final items of LS scale and their standardized factor loadings

Items	Factor loading
In general, I am satisfied with my housing expenditure and my dwelling's basic facilities.	0.68
In general, I am satisfied with my earning.	0.73
In general, I am satisfied with my job quality.	0.55
In general, I am satisfied with my social networks.	0.58
In general, I am satisfied with my education.	0.70
In general, I am satisfied with my environment regarding water quality and air pollution.	0.63
In general, I am satisfied with the services provided by local governmental institutions.	0.52
In general, I am satisfied with the health services I am offered.	0.59
In general, I am happy with my life.	0.79
In general, I feel I am safe in my dwelling area.	0.68
I think I can efficiently balance my working and personal lives.	0.77

Source: Proposed by the author based on the OECD Better Life Index (2018).

4. Analysis Procedure and Results

In this section, the analyses of variances, descriptive statistics, hierarchical regression, and bootstrapped mediation effect are respectively carried out using IBM SPSS® (version 24.0) and SAS® (version 9.4) statistical software and findings are subsequently presented.

4.1. ANOVA and Descriptive Analysis

The significance of variations among demographics was controlled using the *F*-test procedure within the analysis of variance (ANOVA) framework. The *F*-test can determine whether the means of distinguished groups are significantly different (Field, 2013). Significant results of ANOVA *F*-test are reported in Table 9.

Table 9. Comparison of mean differences in demographics: ANOVA *F*-test results (*N:214*)

Groups	CS			LS			TI		
	Mean[1]	*F*	*p*	*Mean*[1]	*F*	*p*	*Mean*[1]	*F*	*p*
Gender									
Male (n:135)	3.27	7.25	0.00(5)	3.99	1.93	0.17	3.48	0.86	0.36
Female (n:79)	3.68			3.78			3.34		
Marital status									
Single (n:71)	3.21	11.59	0.00(5)	3.96	3.14	0.07(3)	3.52	4.95	0.03(4)
Married (n:143)	3.74			3.80			3.31		
Age									
20-29 (n:42)	3.28			3.73			3.47		
30-39 (n:69)	3.20	11.43	0.00(5)	3.76	3.83	0.014	3.40	0.28	0.83
40-49 (n:60)	3.58			3.95			3.36		
50+ (n:43)	3.82			4.09			3.42		
Number of children									
None (n:83)	3.20			3.85			3.44		
1-2 (n:103)	3.63	12.35	0.00(5)	3.82	0.56	0.57	3.38	0.21	0.80
3 and more (n:28)	3.58			3.96			3.42		
Commuting type [2]									
Driving alone (n:100)	3.46			3.89			3.59		
Carpooling (n:41)	3.39	2.92	0.04(4)	3.86	0.19	0.90	3.36	2.84	0.04(4)
Public transportation (n:39)	3.70			3.83			3.41		
Other (n:34)	3.32			3.92			3.30		
Commuting duration									
20– (n:48)	2.94			3.87			3.42		

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20-40 (n:42)	2.91			3.76			3.17		
40-60 (n:50)	3.48	35.70	0.00[5]	3.94	0.81	0.51	3.48	2.81	0.03[4]
60-80 (n:34)	3.83			3.99			3.45		
80+ (n:40)	4.21			3.87			3.59		

[1] Comparisons are based on the means of two survey responses. [2] Together with walkers and bicycle/motorcycle riders, 11 employees working out of workplace (telecommuting) were also included in the 'other' commuter group since they declared that they sometimes stopped by their organizations and traveled between places to fulfill their job-related tasks. [3] Statistically significant at the level of 10%. [4] Statistically significant at the level of 5%. [5] Statistically significant at the level of 1%.

In Table 9, significant ($p<0.10$) results for the independent two-group demographics show that CS level of females is higher than that of males. Married employees have higher CS and lower LS but lesser TI compared to singles. The *p*-values corresponding to the *F*-statistics suggest that one or more groups are significantly different in age, the number of children, commuting type and commuting duration. In order to find out in which pairs of groups the differences are, the *Tukey HSD* test was applied for the groups of those where the *F*-test detected significant differences. The *Tukey HSD* test results are reported in Table 10.

Table 10. Tukey HSD test results[1]

Group pair	*Means*	*Q statistic*	*p*
Age		CS	
(20-29) vs *(40-49)*	*(3.28)* vs *(3.58)*	*3.48*	*0.07*[2]
(20-29) vs *(50+)*	*(3.28)* vs *(3.82)*	*5.88*	*0.00*[4]
(30-39) vs *(40-49)*	*(3.20)* vs *(3.58)*	*5.01*	*0.00*[4]
(30-39) vs *(50+)*	*(3.20)* vs *(3.82)*	*7.51*	*0.00*[4]
Age		LS	
(20-29) vs *(50+)*	*(3.73)* vs *(4.09)*	*3.94*	*0.03*[3]
(30-39) vs *(50+)*	*(3.76)* vs *(4.09)*	*4.02*	*0.02*[3]
No. of children		CS	
(None) vs *(1-2)*	*(3.20)* vs *(3.63)*	*6.85*	*0.00*[4]
(None) vs *(3 and more)*	*(3.20)* vs *(3.58)*	*4.04*	*0.01*[3]
Commuting type		CS	
(Carpooling) vs *(Public transportation)*	*(3.39)* vs *(3.70)*	*3.33*	*0.09*[2]
(Public transportation) vs *(Other modes)*	*(3.70)* vs *(3.32)*	*3.83*	*0.04*[3]
Commuting type		TI	
(Driving alone) vs *(Other modes)*	*(3.59)* vs *(3.30)*	*3.41*	*0.08*[2]
Commuting duration		CS	
(20–) vs *(40-60)*	*(2.94)* vs *(2.91)*	*6.22*	*0.00*[4]
(20–) vs *(60-80)*	*(2.94)* vs *(3.83)*	*9.24*	*0.00*[4]
(20–) vs *(80+)*	*(2.94)* vs *(4.21)*	*13.78*	*0.00*[4]
(20-40) vs *(40-60)*	*(2.91)* vs *(3.48)*	*6.34*	*0.00*[4]
(20-40) vs *(60-80)*	*(2.91)* vs *(3.83)*	*9.29*	*0.00*[4]
(20-40) vs *(80+)*	*(2.91)* vs *(4.21)*	*13.71*	*0.00*[4]
(40-60) vs *(60-80)*	*(3.48)* vs *(3.83)*	*3.67*	*0.08*[2]
(40-60) vs *(80+)*	*(3.48)* vs *(4.21)*	*8.02*	*0.00*[4]
(60-80) vs *(80+)*	*(3.83)* vs *(4.21)*	*3.79*	*0.06*[2]
Commuting duration		TI	
(20-40) vs *(80+)*	*(3.17)* vs *(3.59)*	*4.53*	*0.01*[3]
(20-40) vs *(40-60)*	*(3.17)* vs *(3.48)*	*3.46*	*0.10*[2]

[1]Only significant comparisons are shown. [2]Statistically significant at the level of 10%. [3]Statistically significant at the level of 5%. [4]Statistically significant at the level of 1%.

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Results of the *Tukey HSD* tests infer that in general, i) as employees get old the levels of their CS increase, ii) elder employees are more satisfied with their lives, iii) employees who have child(dren) perceive more CS, iv) employees commuting by public transportation have more CS. v) Employees who commute by driving alone have more TI, and vi) the more time that employees spend during commute, the more CS they perceive.

Data characteristics and bilateral correlations of the variables are reported in Table 11 where the statistics are separately distinguished between two survey periods, i.e., winter and summer times. The figures in Table 11 show that in both waves of the survey, LS has the highest score. Friedman test for dependent sample (Field, 2013) confirmed that this rank is statically significant ($p<0.01$). The ANOVA results also reveals that only CS scores have changed significantly ($p<0.01$) between the two surveys that the CS perception is higher in summer time. Additionally, correlations matrix illustrates that there is a strong and positive correlation between CS and TI. The negative correlations of LS with CS and TI are consistent with the suggested mediation model of the study.

Table 11. Descriptive statistics and correlation matrix

	1st survey (conducted in winter)			2nd survey (conducted in summer)		
	CS	LS	TI	CS	LS	TI
Mean	3.32[1]	3.93	3.38	3.63	3.84	3.46
Maximum	7.00	7.00	7.00	7.00	7.00	7.00
Minimum	1.00	1.00	1.00	1.00	1.00	1.00
Std. Dev.	1.52	1.39	1.73	1.47	1.46	1.68
Skewness	0.31	0.38	0.49	0.38	0.30	0.51
Kurtosis	2.55	2.42	2.27	2.67	2.49	2.31
CS	1.00			1.00		
LS	–0.27[2]	1.00		–0.33[2]	1.00	
TI	0.44[3]	–0.29[2]	1.00	0.51[3]	–0.34[2]	1.00
N	214			214		

[1] Significantly ($p<0.01$) lower than that of in the second survey. [2] Correlations are bilaterally significant at the level of 5%. [3] Correlations are bilaterally significant at the level of 1%.

Before conducting the hierarchical regression analysis, we also checked each series for normality through kurtosis and skewness statistics seen in Table 11. For the perfect normality, the values of skewness and kurtosis are required to be zero. However, in the literature, the absolute values 2 (for skewness) and 7 (for kurtosis) are seen acceptable maximum thresholds for normal distribution (West et al. 1995). In our sample, the skewness values were found ranging between 0.30 and 0.51 while kurtosis values varied between 2.27 and 2.67 meaning that there are not serious deviations from the normality assumption.

4.2. Hierarchical Regression Analysis

The linear regression models in the equations 1, 2, 3 and 4 were estimated hierarchically utilizing the average mean-scores of matched two responses that each employee gave in winter and summer. Results are reported in Table 12. Each of the estimated coefficients shown in Table 12 is found statistically significant at the level of 1%. According to these results, the first three hypotheses are supported: CS is positively and negatively associated with TI and LS, respectively, whereas LS satisfaction adversely affects TI. Besides these direct linkages, estimation of the fourth model relevant to the last hypothesis confirms ($0.48<0.53$) the existence of a weak but significant partial mediating role of LS.

Table 12. Estimated causal relationships between CS, LS, and TI (N:214)

Model	Causal path	Standardized coefficient[1]	Constant	*F*	R^2	*Durbin-Watson* stat.
1	*CS→TI*	0.53 *(0.07) [7.72]*[(2)]	1.56 *(0.26) [5.95]*[(2)]	59.61	0.22	1.78
2	*CS→LS*	–0.28 *(0.07) [4.30]*[(2)]	4.83 *(0.25) [19.35]*[(2)]	18.49	0.08	1.82
3	*LS→TI*	–0.32 *(0.08) [–4.30]*[(2)]	4.71 *(0.31) [15.14]*[(2)]	18.48	0.08	1.62
4	*CS; LS→TI*	0.48 *(0.07) [6.76]*[(2)]; –0.19 *(0.07) [–2.62]*[(2)]	2.49 *(0.43) [5.72]*[(2)]	34.07	0.25	1.76

[1]Standard errors and *t*-statistics of coefficients are respectively denoted in (parentheses) and [brackets].
[2]Statistically significant at the level of 1%.

Additionally, the robustness of these results was checked by controlling for autocorrelation, nonlinearity, and multicollinearity problems. The *Durbin-Watson* values found not that far from 2 indicate that the residues are independent and cross-section units (respondents) were not similar, therefore, the estimated standard errors are reliable. The corresponding *F*-statistics suggest significant linear relationships between the variables and thus the overall significance of the estimated models. Employing the variance inflation factor (VIF) is a useful way to test the presence of multicollinearity among explanatory variables except for the intercept (constant). The general rule is that the VIF values should not exceed 10 for an estimation without serious multicollinearity problem (Aiken et al. 1991; Robinson and Schumacker 2009). In our multivariate estimation of equation 4, centered-VIF was found 1.09 in coefficient diagnostics which means there is no multicollinearity problem. All these properties infer that the overall estimations are robust and equivalently reliable.

4.3. Validation of Mediation Effect

The indirect effects transmitted by a mediator variable can be validated by estimating standard errors. One of the most commonly used estimates of the standard error is Sobel (1982) test where the mediated effect divided by its standard error yields a *z*-score. In our case, Sobel's *z*-value was found 2.83 with a standard error of 0.03 and a probability value lesser than 0.01 that support the existence of the partial mediation. However, Sobel test relies on an assumption of normal distribution and therefore works better in large samples. In the case of nonnormality and small sample, the bootstrapping method offers a much better alternative that does not impose distributional assumptions (Preacher and Hayes 2008; Streukens and Leroi-Werelds, 2016). Even simulation studies indicate that the Sobel-type estimator of the standard error shows low bias for sample sizes of at least 50 in single-mediator models (MacKinnon et al. 2007), we nevertheless validated the mediating role of LS by bootstrapping the standard error of the mediated effect. Bootstrapping is based on resampling to make inferences rather than making assumptions about the population. Based on the comparative explanations of Wood (2005), MacKinnon et al. (2007) and Hayes (2013), considering the large size of the population in our study, first we generated 1000 new bootstrap sample size using bootstrap-*t* resampling method. Then, we calculated new coefficients relevant to this new sample for the cross-validation of unbiased estimates of original sample and bootstrap sample. Finally, we controlled new standard errors whether they were between the lower and upper confidence intervals that were determined based on 1000 bootstrap sample at the 95% confidence interval (the lower limit is at the 2.5th percentile and the upper limit is at the 97.5th percentile). Results of bootstrap estimation shown in Table 13 significantly confirm the partial mediating role of LS which unbiasedly transmits the indirect effect of CS on TI. Therefore, the validity of the last hypothesis is confirmed as well.

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Noticeably, the mediation effect found by bootstrap estimate (0.45<0.61) is stronger than that of classical estimate (0.48<0.53).

Table 13. Bootstrap estimation of the mediating effect of LS on CS-TI relationship (*N:1000*)

Causal path	Coefficient (average)	Std. error	Confidence interval Lower	Upper	Inference
CS→TI	0.61	0.09	0.04	0.15	
CS→LS	–0.30	0.09	0.04	0.14	Significant at the
LS→TI	–0.24	0.11	0.06	0.15	level of 5%.
CS; LS→TI	0.45; –0.16	0.10; 0.09	0.05	0.13	

5. Conclusions and Implications

In spite of a global increase in the number of studies about what influence TI, much of the relevant research in business and management literature has apparently neglected the impacts of CS. Additionally, as an external factor, LS, which is affected by a wide array of work-related and nonwork factors, can mediate the relationship between CS and TI. However, very little research has been conducted on the impact of CS on TI in developing countries like Turkey. Moreover, there has been no empirical study investigating the mediating role of LS in the relationship between CS and TI in Turkey.

As one of the primary initiatives, within a mediation model framework and using hierarchical regression analysis, this empirical study attempted to explore to the direct and indirect (through LS) causal impacts of CS on TI in the case of Turkish employees. The study found important results that provide new insights into both theoretical and practical implications. The key findings about demographics can be summarized as follows: i) Female employees' CS was significantly higher than that of males. This can be explained by the extra responsibilities of women for family cares that can place extra commutes and CS on them. ii) Married employees had relatively higher CS and lower LS but lesser TI compared to those of singles. Considering the persistently high unemployment in Turkey, this evidence can be indicating that married people tend to be more risk-averse and therefore necessarily attached to their organizations. iii) CS perception was higher in summer time. Considering the cities that the study covered are more crowded in summer time, this change is not surprising. Moreover, normally, these cities can be extremely and depressively hot in summer time. iv) As employees get old, their CS levels increase. This can be a consequence of lower energy to cope with commuting-related issues. v) Elder employees were more satisfied with their lives. This may imply lower life expectation of elder employees those can do with less. vi) Employees who have child(dren) perceived more CS. This is congruent with the fact that working families need more time devoted to also their children and thus they tend to experience more CS. vii) Employees commuting by public transportation had more CS. Public transportation vehicles in Turkey are usually crowded and frequently enforced to stop caused by heavy traffic or traffic signals (stop-and-go). viii) Employees who commute by driving alone had more TI. Combining this with the other evidence that ix) the more time that employees spent while commuting the more CS level they had, this leaving tendency can be explained by the commuting cost and stressful commuting experiences. These commuters may consider changing their residential locations that is another stress source for commuting employees.

The results of hierarchical regression analysis explored that increasing CS would induce TI and reduce LS, whereas lower LS led to higher TI. Besides these direct relationships, estimations also confirmed the existence of a partial mediating role of LS, which was unbiasedly validated by the Sobel test and additional bootstrap estimation. Therefore, it is inferred that CS not only directly encourages employees to leave their jobs, but also it does so indirectly by reducing their LS level at the same time.

Consequently, the study highlights that CS of employees may spill over into work (as a lower organizational commitment) and non-work domains (as a lower LS) that both may induce employees to leave their organizations. Therefore, business organizations that endeavor to retain their employees need to not only satisfy them with their jobs but also make them satisfied with their overall lives. One of the efficient ways to accomplish so is reducing the negative influences that CS caused by lengthy and

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stressful travel to and from workplaces. In this context, overall findings infer that business organizations need to provide different support programs and work schedules for their employees that include flexible working schedule, telecommuting, flexible dress code, company cars transportation, commuting cost compensation, and fuel support in order to ease CS and to improve the LS of their employees in Turkey case. These remedies that can benefit both employees and employers are also subject to be customized for unique demographic characteristics of employees and seasonal variations. This requires organizations to have well-functioning human resource management departments.

Recently Turkey has been improving transportation infrastructures for all modes (road, rail, air, sea, and multi-modal transports) especially in populous cities like İstanbul. Given the density of business clusters in these cities, these advances in transportation are seen subject to have much more progress. Besides, it can be inferred that employees sometimes can oscillate between accepting a low-quality job with lower CS and a high-quality job with higher CS, which can result in an adverse selection and thus in a loss in overall productivity. This vacillation can also occur while selecting dwelling and workplace alternatives. In this context, both governmental institutions and employers need to focus on offsetting the negative consequences of living and/or working in disadvantageous locations by implementing better services of education, transportation, health, infrastructure, environmental quality, work-life balance, residential planning, socialization activity, etc., that contribute to overall LS.

6. Study Limitations and Suggestions for Future Research

The study has several limitations arisen from both conceptual and empirical settings.

Firstly, because of a lack of clear conceptualization, there are seemingly not many valid and reliable scales for measuring the variables. Many studies theoretically build on a strong negative association between TI and organizational commitment (loyalty) and use them interchangeably. Yet, the concept of TI needs to have a distinct scale which also reflects the actual turnover rates beyond just the intention to leave. CS definitions based on only the destination length and commuting time are unable to capture the stress dimension of commuting entirely. Distinguishing CS between different aspects such as evening-morning, workday-holiday, and summer-winter commutes also would be a good way to capture the impacts more clearly that help managers or employers in coping with CS-related challenges. Moreover, practitioners should keep in mind that commuting stressors of some employees are not stressors for others. Again, in the extant literature, LS measure is based on respondents' self-assessments of how much they are satisfied with their overall lives. This approach tends to fail to capture the multifaceted features of the concept. Our study is one of the first initiatives considering also seasonal changeability of CS and multidimensional characteristics of LS that need to be paid more attention by future studies.

Secondly, even the current study implemented a two-wave survey this was for the purpose of capturing the seasonal differences in responses. Thus, the analyses were methodologically limited by the cross-sectional design. For future studies, researchers are recommended to employ a longitudinal design to better discover causal relationships.

Thirdly, TI research has traditionally examined intention to turnover rather than actual turnover. Such studies assume that leave intent serves equally well as both a proxy for and a predictor of employees' actual turnover behavior. Even our study was not interested in actual turnover, yet, it was noticed that adjusting TI scale by actual turnover rates would be more useful.

Lastly, because this study captured only a small-sized sample which is far below of representing all commuter employees in Turkey, it is necessary to be cautious while interpreting and generalizing the results.

Besides these limitations, the study finally suggests that future studies should take CS and LS together with environmental, seasonal, and demographic factors into consideration when analyzing TI.

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