

Factors Predicting Teachers' Job Satisfaction in Korean Secondary Schools

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ABSTRACT

This research aims to reveal the combinations of conditions leading to Korean teacher job satisfaction. The data of this study are derived from the 2018 Teaching and Learning International Survey (TALIS). Teacher job satisfaction was approached as a composite scale with two dimensions: job satisfaction with profession and job satisfaction with work environment. The explanatory variables were preparation for pedagogical content knowledge, teacher self-efficacy in general, teacher self-efficacy in multicultural classrooms, teachers' innovative climate, teacher-student relations, social perceptions of teacher value, and professional development barriers. The findings using fsQCA are as follows; 1) the presence of social perceptions of teacher value is a necessary condition for a high level of job satisfaction with the profession. 2) Four distinct paths were extracted to explain the high level of job satisfaction with the profession. 3) Four distinct paths were shown clearly to explain the low level of job satisfaction with the profession. 4) None of the conditions is a necessary condition for job satisfaction with the work environment. 5) Five distinct paths were singled out to explain the high level of job satisfaction with the work environment. 6) Three distinct paths were identified to explain the low level of job satisfaction with the work environment. The findings revealed Korean teacher job satisfaction in multicultural secondary schools by outlining several combinations of factors that lead to paths explaining job satisfaction with profession and job satisfaction with work environment. Some implications and a few recommendations to improve teacher job satisfaction are suggested.

Keywords: Teachers Job Satisfaction, Necessary Condition, Sufficient Condition, Fuzzy-set Qualitative Comparative Analysis(fsQCA).

INTRODUCTION

As a result of the growth in international migration in recent decades, Korean schools have become considerably more diverse, both demographically and culturally. Approximately 1.2 million students from multicultural backgrounds account for 2.0 percent of the nation's total student population (Koreatimes, 2020). In multicultural school contexts, teachers have to deal with many stressors related to the culturally diverse context, affecting teachers' job satisfaction (Glock, Kleen, & Morgenroth, 2019). However, most studies dealing with Korean teacher job satisfaction (KTJS) were carried out without considering the multicultural context, which lead to a limit to understanding KTJS in secondary schools with students from multicultural backgrounds (after this referred to as multicultural secondary schools). Therefore, the researcher tried to explore what factors affect KTJS in a multicultural context in this study. This research posited that teachers' job satisfaction is a very complex social phenomenon that is influenced by many factors (Abdulahi, 2020; Bahçivan, 2012; Caprara, Barbaranelli, Borgogni, & Steca, 2003; Choi, Kwon, Kim, & Park, 2013; Collie, Shapka, & Perry, 2012; Fuming & Jiliang, 2008; Gkolia, Belias, & Koustelios, 2014; Hwang, 2012; Kim & An, 2018; Klassen & Chiu, 2010; Klassen, Usher, & Bong, 2010; Kouni, Koutsoukos, & Panta, 2018; Lee & Lee, 2010; Lee, & You, 2020; Lee, 2007; Lee, Kang, & Kim, 2017; Meagher, 2011; Naz, 2017; Rapti & Karaj, 2012; Tien, 2018; Veldman, Tartwijk, Brekelmans, & Wubbels, 2013; Yoo & Rho, 2020; Zakariya, 2020; Zembylas & Panapastasiou, 2006).

It is worth noting that social phenomena have causal complexity characteristics, which are defined as conjunctural causation, equifinality, and causal asymmetry (Kapsali, 2012). Therefore, KTJS rarely has any single factor and rarely work in isolation from each other. For a more in-depth understanding of KTJS in multicultural secondary schools, this researcher tried to reveal a combination of different factors affecting KTJS through the lens of complexity theory rather than focusing on the relationship between a single variable and KTJS. For this, fuzzy sets qualitative comparative analysis (fsQCA) was applied, starting from the premise that social phenomena have causal complexity characteristics (Ragin, 2006). This study aims to reveal combinations of factors leading to KTJS in multicultural schools, using fsQCA through the lens of

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the complexity framework and suggesting implications for increasing KTJS in multicultural secondary schools.

Regarding this purpose, the following four research questions were addressed:

- Which conditions are necessary for teachers' job satisfaction with work environment in Korean multicultural secondary schools?
- Which conditions are necessary for teachers' job satisfaction with profession in Korean multicultural secondary schools?
- Which conditions or combination of conditions are usually sufficient for teachers' job satisfaction with work environment in Korean multicultural secondary schools?
- Which conditions or combination of conditions are usually sufficient for teachers' job satisfaction with profession in Korean multicultural secondary schools?

LITERATURE REVIEW

Job satisfaction is related to two dimensions of work environment and job profession. OECD approached teachers' job satisfaction as a composite scale with two dimensions (satisfaction with work environment and satisfaction with profession) in 2018 TALIS (Teaching and Learning International Survey) (OECD, 2019). Teacher job satisfaction was also found to be related to multi-layered factors including salary, benefits, promotion (Fuming & Jiliang, 2008), teachers' efficacy (Lee, Kang, & Kim, 2017; Klassen, Usher, & Bong, 2010; Caprara, Barbaranelli, Borgogni, & Steca, 2003), well-prepared pedagogical content knowledge (Kim & An, 2018; Bahçivan, 2012; Samusevica & Striguna, 2017), professional development (AL-Jadidi, 2022; Fuming & Jiliang, 2008; Meagher, 2011), teacher-student relationship (Fuming & Jiliang, 2008; O'Shea, 2021; Veldman, Tartwijk, Brekelmans, & Wubbels, 2013; Collie, Shapka, & Perry, 2012), principal leadership (Choi, Kwon, Kim, & Park, 2013; Kouni, Koutsoukos, & Panta, 2018), and school climate (Fuming & Jiliang, 2008; Collie, Shapka, & Perry, 2012; Abdulahi, 2020). More specifically, prior research has reported that salaries or welfare benefits affect teacher job satisfaction (Fuming & Jiliang, 2008). A more positive teacher-colleague relationship is associated with higher teachers' job satisfaction (Fuming & Jiliang, 2008). Transformative principal leadership is positively associated with teacher job satisfaction (Choi, Kwon, Kim, & Park, 2013; Kouni, Koutsoukos, & Panta, 2018). There is a positive relation between teacher empowerment and teacher job satisfaction, and there was a positive association between teacher job satisfaction and school culture. Specifically with teachers' cooperative professional development (Abdulahi, 2020); as a part of school climate, amicable teacher-student relations are positively related to job satisfaction (Yoo & Rho, 2020; Veldman, Tartwijk, Brekelmans, & Wubbels, 2013; Collie, Shapka, & Perry, 2012).

Regarding the teacher level, higher pedagogical content knowledge is associated with higher teacher job satisfaction (Kim & An, 2018; Bahçivan, 2012), and deficiency in pedagogical content knowledge may cause a decrease in teacher job satisfaction; professional development programs aiming to improve teachers' competency provide teachers to realize their values in teaching, then, this realization is associated with higher teacher job satisfaction (Fuming & Jiliang, 2008; Meagher, 2011); perceived barriers to professional development is a predictor for teacher job satisfaction (Yoo & Rho, 2020); teacher self-efficacy in general (e.g., self-efficacy in classroom management, self-efficacy in student engagement, and self-efficacy in instruction) have been found to be positively related to job satisfaction (Naz, 2017; Klassen & Chiu, 2010; Zakariya, 2020).

Along with these factors, teachers working in multicultural schools are experiencing many stressors which are related to the culturally diverse context. These stressors may lead to teacher diversity-related burnout (Tatar & Horenczyk, 2003). For teachers in multicultural schools to interact more effectively with their students from multicultural backgrounds and cope with stressors, they must acquire additional competency and improve teacher self-efficacy in multicultural schools. More specifically, teachers can adapt teaching style to the cultural diversity of their students, reduce ethnic stereotyping amongst students, and raise awareness of cultural differences amongst students, which is referred to as 'teacher self-efficacy in multicultural schools. Therefore, teacher self-efficacy in multicultural schools is needed as an essential factor affecting teacher job satisfaction. Teachers' self-efficacy in multicultural schools is gradually emerging as an important factor in Korean society.

METHODS

Data Collecting

The researcher took research data from the 2018 Teaching and Learning International Survey (TALIS) that addresses a separate scale titled "teacher self-efficacy in multicultural classrooms" in addition to teacher efficacy in general (OECD, 2019). The TALIS is conducted by the Organization for Economic Cooperation and Development and is the latest international large-scale database containing a nationally representative sample of teachers. iTS' sampling is a stratified two-stage probability sampling design and contains nationally representative samples of teachers (OECD, 2019). In this study, after eliminating cases with missing data, 492 Korean school teachers were selected as the valid sample for this research. Most teachers were female (75.5%), and the teachers' ages ranged from 25 to 65 years. In terms of distribution of experiences as a teacher in total, until ten years is 35%, from over ten years to 20 years is 31.2%, and 20 years over is 33.8%.

Variables and Measurement Instrument

This research explores combinations of factors leading to KTJS in multicultural schools. The outcome variable (dependent variables) is teacher job satisfaction. The causal variables (independent variables) are preparation for pedagogical content knowledge, teacher self-efficacy in general, teacher self-efficacy in multicultural classrooms, teachers' innovative climate, teacher-student relations, professional development barriers, and social perceptions of teacher value.

Factor analysis was carried out to measure how well the actual empirical data reflected the predefined latent construct. First, Exploratory factor analysis followed by the principal axis factoring technique using a varimax rotation with an eigenvalue greater than 1 was performed for each of the variables included in this study. Items with communality less than 0.40 were removed, and items with a loading less than 0.40 on component were deducted. Confirmatory factor analysis was also conducted to assess the construct validity of items. The construct validity was tested by composite reliability (CR) and the average variance extracted (AVE) indices.

When CR and AVE are more than 0.7 and more than 0.5, respectively, they are considered acceptable (Hair, Black, Balin, & Anderson, 2010). But, even if AVE is less than 0.5, if composite reliability is higher than 0.6, then the convergent validity of the construct is considered to be still adequate (Fornell & Larcker, 1981). Also, Cronbach's alpha was measured to test internal consistency. Cronbach's alpha coefficient of 0.70 and above is considered to be good. A two-item scale was examined by the Spearman-Brown coefficient, and a value above 0.70 is considered to be acceptable.

Regarding teacher job satisfaction, two factors were extracted through exploratory factor analysis: job satisfaction

with profession, job satisfaction with work environment. Perceptions of teacher value and influence on policy-making were assessed using five items (salary, the teaching terms including benefits, policy influence, media influence). Salary and benefits can be approached as a symbol of social value for teachers and the meaning of direct compensation provided economically for teachers' work. The impact on policy-making is also a critical criterion that reflects the social perception of teachers. Therefore, the items are closely related to the social perception of teacher values, and this factor is named as social perception of teacher values.

Two items were selected as significant predictors of Korean teachers' job satisfaction among the measured items for teacher-student relations in research conducted via machine learning with data from 2013 TALIS (Yoo & Rho, 2020). Based on Yoo and Rho's research findings, the researcher measured teacher-student relations using two items: (1) Teachers and students usually get on well with each other. (2) Most teachers believe that the students' well-being is important. However, only two items can be more prone to estimation problems, but recent evidence suggests that single-item measures may suffice for very narrowly defined constructs (Bergkvist & Rossiter, 2007). Furthermore, there is no difference in effect sizes when the double-concrete dependent variables were measured with single or multiple items (Ang & Eisend, 2017). To calculate the reliability of a two-item scale, the researcher assessed the Spearman-Brown coefficient, and it was 0.77.

Table 1 presents variables, measurement items, CR, the AVE, and Cronbach's α . As shown in Table 1, each construct's convergent validity is considered adequate. Also, Cronbach's alpha coefficients met the requirements to be considered appropriate.

Table 1. Variables and Measurement

Variable	Measured items	CR	AVE	Cronbach' α
TJSP	<ul style="list-style-type: none"> How strongly do you agree or disagree with the following statements? The advantages of being a teacher clearly outweigh the disadvantages. If I could decide again, I would still choose to work as a teacher. I regret that I decided to become a teacher. I wonder whether it would have been better to choose another profession. I think that the teaching profession is valued in society All in all, I am satisfied with my job 	0.86	0.51	0.85
TJSWE	<ul style="list-style-type: none"> I enjoy working at this school. I would like to change to another school if that were possible. I would recommend this school as a good place to work. I am satisfied with my performance in this school. 	0.80	0.50	0.78
PPCK	<ul style="list-style-type: none"> To what extent did you feel prepared for each element in your teaching? Content of some or all subject(s) I teach Pedagogy of some or all subject(s) I teach General pedagogy Classroom practice in some or all subject(s) I teach 	0.93	0.76	0.93
TSEG	<ul style="list-style-type: none"> In your teaching, to what extent can you do the following? Get students to believe they can do well in school work 	0.94	0.53	0.93

Variable	Measured items	CR	AVE	Cronbach' α
TSEG	<ul style="list-style-type: none"> • Help students value learning • Craft good questions for students • Control disruptive behavior in the classroom • Motivate students who show low interest in school work • Make my expectations about student behavior clear • Help students think critically • Get students to follow classroom rules • Calm a student who is disruptive or noisy • Use a variety of assessment strategies • Provide an alternative explanation, for example, when students are confused • Vary instructional strategies in my classroom • Support student learning through the use of digital technology 			
TSEM	<ul style="list-style-type: none"> • In teaching a culturally diverse class, to what extent can you do the following? • Cope with the challenges of a multicultural classroom • Adapt my teaching to the cultural diversity of students • Ensure that students with and without a migrant background work together • Raise awareness for cultural differences amongst students • Reduce ethnic stereotyping amongst students. 	0.91	0.68	0.92
TI	<ul style="list-style-type: none"> • Thinking about the teachers in this school, how strongly do you agree or disagree with the following statements? • Most teachers in this school strive to develop new ideas for teaching and learning. • Most teachers in this school are open to change. • Most teachers in this school search for new ways to solve problems. • Most teachers in this school provide practical support to each other for the application of new ideas. 	0.92	0.75	0.92
PDB	<ul style="list-style-type: none"> • How strongly do you agree or disagree that the following present barriers to your participation in professional development? • Professional development is too expensive. • There is a lack of employer support. • Professional development conflicts with my work schedule. • There are no incentives for participating in professional development. 	0.75	0.43	0.74
STV	<ul style="list-style-type: none"> • How strongly do you agree or disagree with the following statements? • I am satisfied with the salary I receive for my work. • Apart from my salary, I am satisfied with the terms of my teaching <contract/employment> (e.g., benefits, work schedule) • Teachers' views are valued by policymakers in this country/region. • Teachers can influence educational policy in this country/region. • Teachers are valued by the media in this country/region. 	0.84	0.52	0.84

Note: All variables were estimated on a 4-point scale. Preparation for pedagogical content knowledge (PPCK), Teacher self-efficacy in general (TSEG), Teacher self-efficacy in multicultural classrooms (TSEM), Teachers' innovative climate (TI), Social perceptions of teacher value (STV), Professional development barriers (PDB).

Analysis Method and Analysis Tools

This research method is the fsQCA based on the premise that social phenomena have causal complexity characteristics, accounting for the complex interdependencies among factors that achieve KTJS. The fsQCA uses the set-theoretic relations such as necessary condition and sufficient condition. This method evaluates causal necessity and causal sufficiency through consistency and coverage. Consistency measures the proportion of members of the subset that are members of the superset, similar to significance in regression analysis. The higher the consistency is, the stronger the set relationship is. Coverage gauges a configuration's empirical relevance or importance, which is similar to R^2 in regression analysis (Ragin, 2008). In assessing causal sufficiency, fsQCA uses

the probabilistic concept of quasi-sufficiency, wherein sufficiency is evaluated based on specific benchmarks. For example, a causal condition can be almost always sufficient (significantly passing a standard of 0.8), usually sufficient (significantly passing a standard of 0.65), or sufficient more often than not (significantly passing a standard of 0.50) in causing the outcome (Ragin, 2006; Ragin, 2008; Greckhamer, Vilmos, & Fiss, 2013; Schneider & Wagemann, 2012). Descriptive analyses, exploratory factor analysis, and reliability analysis were conducted using SPSS ver. 25.0 for Windows. Confirmatory factor analysis was carried out using the AMOS ver. 26.0, and AVE and CR were assessed using the construct calculator. The fsQCA software ver. 2.5 for Windows was used as an analysis tool for fsQCA.

FINDINGS

Distribution to teachers' response

A descriptive analysis was carried out to examine the distribution of teachers' responses. A fuzzy-set scale's degree of membership ranges from a score of 0 (full exclusion) to 1 (full inclusion). All conditions must be transformed into calibrated sets using three qualitative anchors. Three anchors must be included the threshold for full membership (fuzzy score = 0.95), the cross-over point (fuzzy score = 0.5), and the threshold for full non-membership (fuzzy score = 0.05) (Ragin, 2006; Fornell & Larcker, 1981; Bergkvist & Rossiter, 2007; Ang & Eisend, 2017).

These three anchors need to be based on theoretical and substantive knowledge of the cases. Since there are no explicit external standards for calibration, the threshold values were determined using the sample's existing distribution. All indicators were normalized using the min-max normalization method. The threshold for full membership (fuzzy score = 0.95) was set at 0.8, and the threshold for full non-membership (fuzzy score = 0.05) was set at 0.2. The cross-over point was set at the median. For example, membership in the set of TJSP, coding membership as fully out of the set if a teacher showed causal values of 0.2 or below and fully in the set if a teacher showed causal values of 0.8 or higher. The cross-over point was set at 0.66, which corresponds to the median value of 18. Table 2 summarizes the descriptive statistics and the threshold value for each of the variables (Table 2).

Analysis of Necessary Conditions

As the first step to necessary condition analysis, seven causal variables' positive and negative forms were included in the analysis of necessary conditions. Based on the recommendation (Ang & Eisend, 2017), the acceptable level of consistency for

the test of necessity was set at 0.90. Table 3 and Table 4 show the results corresponding to job satisfaction with profession and job satisfaction with the work environment.

Table 3 shows that the high level of STV is a necessary condition for the occurrence of a high level of Korean teacher job satisfaction with profession in multicultural schools. On the other hand, the low level of STV is a necessary condition for the occurrence of a low level of job satisfaction with profession. Meanwhile, as depicted in Table 4, as consistency for conditions ranged from 0.41 to 0.86, none of the independent variables is a necessary condition for the occurrence of Korean teacher job satisfaction with work environment in multicultural schools

Analysis of sufficient conditions

The truth table, an aggregated form of the raw data and has as many rows as possible combinations of values on the causal conditions, was analyzed as the first step for sufficient conditions analysis (Ragin, 2006). The configurations leading to high KTJS can differ from those leading to a low level of KTJS due to the asymmetry causality. Therefore, I carried out fsQCA modeling a low level of KTJS and a high level of KTJS separately. Tables 5 and 6 show the distribution of cases across combinations of causal conditions for Korean teacher job satisfaction with profession, and Korean teacher job satisfaction with work environment.

The number of logically possible configurations is $128(2^7)$. In large-N fsQCA studies, stratified sampling was recommended so that sample well represents the population's diversity of cases (Greckhamer, Vilmos, & Fiss, 2013). TALIS sampling was a stratified two-stage probability sampling design, and sampling is suitable for large-N fsQCA studies. Greckhamer and his colleagues (Greckhamer, Vilmos, & Fiss, 2013) suggest that the threshold for frequency of large-sized samples be at a minimum of three, and at least 80% of the cases

Table 2: Descriptive Statistics and Qualitative anchors

Variable	Mean	SD	Median	Min.	Max.	Qualitative anchors		
						full membership	cross-over	full non-membership
TJSP	17.85	3.63	18	6	24	0.8	0.66	0.2
TJWE	11.34	2.53	12	4	16	0.8	0.66	0.2
PPC	11.81	2.92	12	4	16	0.8	0.66	0.2
TAG	40.26	6.84	39	13	52	0.8	0.66	0.2
TSEM	11.94	3.23	11	5	20	0.8	0.4	0.2
TSR	16.00	2.56	15	5	20	0.8	0.66	0.2
TI	11.64	2.69	12	4	16	0.8	0.66	0.2
PDB	11.51	2.33	12	4	16	0.8	0.66	0.2
STV	10.43	3.00	10	5	20	0.8	0.33	0.2

Note. TJSP: Teacher job satisfaction with profession, TJWE: Teacher job satisfaction with work environment, PPC: Preparation for pedagogical content knowledge, TSEG: Teacher self-efficacy in general, TSEM: Teacher self-efficacy in multicultural classrooms, TSR: Teacher-student relations, TI: Teachers' innovative climate, PDB: professional development barriers, STV: Social perceptions of teacher value

Table 3: Necessary condition for Korean teacher job satisfaction with profession

Variable Consistency	High Level	Consistency	Low Level	
	Coverage		Coverage	
PPCK	0.74	0.76	0.68	0.41
~PPCK	0.42	0.69	0.59	0.57
TSEG	0.84	0.75	0.82	0.42
~TSEG	0.35	0.77	0.51	0.66
TSEM	0.64	0.80	0.64	0.47
~TSEM	0.57	0.73	0.73	0.54
TSR	0.81	0.77	0.82	0.45
~TSR	0.43	0.81	0.59	0.65
TI	0.74	0.76	0.75	0.45
~TI	0.46	0.76	0.59	0.57
PDB	0.68	0.72	0.80	0.49
~PDB	0.52	0.82	0.54	0.49
STV	1.00	1.00	0.58	0.34
~STV	0.34	0.58	1.00	1.00

Note. ~ indicate logical negation and is interpreted as the absence of factors, and bold font denotes a condition that is necessary for outcomes of teacher job satisfaction with the profession. PPCK: Preparation for pedagogical content knowledge, TSEG: Teacher self-efficacy in general, TSEM: Teacher self-efficacy in multicultural classrooms, TSR: Teacher-student relations, TI: Teachers' innovative climate, PDB: professional development barriers, STV: Social perceptions of teacher value

Table 4. Necessary condition for Korean teacher job satisfaction with work environment

V	High level		Low level	
	Consistency	Coverage	Consistency	Coverage
PPCK	0.74	0.69	0.70	0.49
~PPCK	0.45	0.67	0.55	0.61
TSEG	0.86	0.69	0.81	0.49
~SEG	0.36	0.72	0.48	0.72
TSEM	0.66	0.75	0.63	0.54
~SEM	0.59	0.68	0.70	0.61
TSR	0.85	0.73	0.77	0.49
~SR	0.41	0.70	0.58	0.74
TI	0.79	0.73	0.70	0.48
~TI	0.44	0.66	0.61	0.68
PDB	0.68	0.65	0.80	0.58
~PDB	0.56	0.79	0.51	0.54
STV	0.86	0.78	0.67	0.46
~STV	0.40	0.62	0.67	0.78

Note. ~ indicate logical negation and is interpreted as the absence of factors. PPCK: Preparation for pedagogical content knowledge, TSEG: Teacher self-efficacy in general, TSEM: Teacher self-efficacy in multicultural classrooms, TSR: Teacher-student relations, TI: Teachers' innovative climate, PDB: professional development barriers, STV: Social perceptions of teacher value

should be included. Based on recommendations, the frequency threshold was set at 3. Schneider and Wagemann (2012) suggested that one should place the consistency threshold at 0.9, based on the deterministic notion behind necessity and sufficiency. In this research, the raw consistency threshold was set at 0.9. In addition to raw consistency, it is also essential to

consider PRI (proportional reduction in inconsistency) scores to avoid simultaneous subset relations of configurations in both the outcome presence and its absence.

PRI consistency values less than 0.5 indicate significant inconsistency (Ragin, 2006), and the PRI consistency threshold set at 0.5. Considering raw consistency and PRI consistency

Table 5: Truth table showing causal conditions of Korean teacher job satisfaction with profession

PPCK	TSEG	TSEM	TSR	TI	PDB	STV	N(%)	High Level		Low Level	
								raw consist.	PRI consist.	raw consist.	PRI consist.
1	1	1	1	1	0	1	40(10)	0.93	0.85	0.63	0.15
1	1	1	1	1	1	1	35(18)	0.91	0.79	0.64	0.19
1	1	0	1	1	0	1	23(24)	0.92	0.78	0.72	0.21
1	1	0	1	1	1	1	16(28)	0.92	0.78	0.72	0.21
1	1	1	1	0	0	1	13(32)	0.93	0.78	0.76	0.22
1	1	0	1	0	1	1	12(35)	0.92	0.74	0.78	0.26
0	1	1	1	1	1	1	11(37)	0.92	0.74	0.77	0.26
1	1	0	1	1	1	0	11(40)	0.88	0.46	0.89	0.52
0	0	0	1	0	1	1	10(43)	0.86	0.49	0.87	0.51
1	1	1	1	1	1	0	9(45)	0.85	0.41	0.90	0.58
0	1	1	1	1	0	1	8(47)	0.95	0.84	0.75	0.14
1	1	1	1	1	0	0	8(49)	0.90	0.58	0.87	0.41
1	1	1	1	0	1	1	8(51)	0.92	0.73	0.77	0.27
0	0	0	1	0	1	0	8(53)	0.83	0.26	0.94	0.74
0	1	0	1	1	1	1	7(55)	0.90	0.64	0.82	0.36
0	1	0	1	1	0	0	7(56)	0.93	0.65	0.88	0.35
1	0	0	1	1	1	1	7(58)	0.94	0.76	0.80	0.24
1	1	1	1	0	1	0	7(60)	0.85	0.34	0.92	0.66
0	1	1	1	1	1	0	6(62)	0.87	0.36	0.92	0.62
0	1	0	1	1	0	1	6(63)	0.96	0.84	0.78	0.16
1	1	0	1	0	0	1	6(65)	0.93	0.74	0.82	0.26
0	1	0	1	0	0	1	6(66)	0.94	0.73	0.82	0.27
0	1	0	1	0	1	0	6(68)	0.85	0.32	0.93	0.68
0	0	0	1	1	1	0	5(69)	0.86	0.30	0.94	0.70
0	0	0	1	0	0	0	5(70)	0.89	0.38	0.93	0.62
0	1	0	1	1	1	0	4(71)	0.87	0.38	0.92	0.60
1	1	0	1	1	0	0	4(72)	0.92	0.54	0.90	0.46
0	1	1	1	0	1	0	4(73)	0.85	0.26	0.95	0.74
0	1	0	1	0	1	1	4(74)	0.90	0.63	0.83	0.37
0	0	1	1	0	0	1	4(75)	0.94	0.74	0.84	0.26
0	0	0	1	1	0	1	3(76)	0.94	0.74	0.84	0.26
1	0	0	1	1	0	0	3(77)	0.92	0.44	0.93	0.56
0	0	0	1	1	0	0	3(77)	0.92	0.48	0.93	0.52
0	1	1	1	0	1	1	3(78)	0.92	0.69	0.82	0.31
0	1	1	1	0	0	0	3(79)	0.91	0.43	0.93	0.57
1	1	0	1	0	0	0	3(80)	0.91	0.36	0.95	0.64
1	0	0	1	0	1	1	3(81)	0.94	0.75	0.83	0.25
0	0	0	1	0	0	1	3(82)	0.93	0.66	0.85	0.34
1	0	0	1	0	1	0	3(83)	0.90	0.34	0.95	0.66
0	0	0	0	0	1	0	3(83)	0.79	0.20	0.95	0.80

Note. bold font indicates configurations that are sufficient for the outcomes of teachers' job satisfaction with profession. PPCK: Preparation for pedagogical content knowledge, TSEG: Teacher self-efficacy in general, TSEM: Teacher self-efficacy in multicultural classrooms, TSR: Teacher-student relations, TI: Teachers' innovative climate, PDB: professional development barriers, STV: Social perceptions of teacher value

Table 6: Truth table showing Korean teacher job satisfaction with work environment

PPCK	TSEG	TSEM	TSR	TI	PDB	STV	N(%)	High Level		Low level	
								raw consist.	PRI consist.	raw consist.	PRI consist.
1	1	1	1	1	0	1	40(10)	1.00	1.00	0.56	0.00
1	1	1	1	1	1	1	35(18)	1.00	1.00	0.55	0.00
1	1	0	1	1	0	1	23(24)	1.00	1.00	0.62	0.00
1	1	0	1	1	1	1	16(28)	1.00	1.00	0.64	0.00
1	1	1	1	0	0	1	13(32)	1.00	1.00	0.65	0.00
1	1	0	1	0	1	1	12(35)	1.00	1.00	0.65	0.00
0	1	1	1	1	1	1	11(37)	1.00	1.00	0.70	0.00
1	1	0	1	1	1	0	11(40)	0.87	0.00	1.00	1.00
0	0	0	1	0	1	1	10(43)	1.00	1.00	0.74	0.00
1	1	1	1	1	1	0	9(45)	0.86	0.00	1.00	1.00
0	1	1	1	1	0	1	8(47)	1.00	1.00	0.68	0.00
1	1	1	1	1	0	0	8(49)	0.90	0.00	1.00	1.00
1	1	1	1	0	1	1	8(51)	1.00	1.00	0.66	0.00
0	0	0	1	0	1	0	8(53)	0.86	0.00	1.00	1.00
0	1	0	1	1	1	1	7(55)	1.00	1.00	0.75	0.00
0	1	0	1	1	0	0	7(56)	0.90	0.00	1.00	1.00
1	0	0	1	1	1	1	7(58)	1.00	1.00	0.72	0.00
1	1	1	1	0	1	0	7(60)	0.87	0.00	1.00	1.00
0	1	1	1	1	1	0	6(62)	0.87	0.00	1.00	1.00
0	1	0	1	1	0	1	6(63)	1.00	1.00	0.74	0.00
1	1	0	1	0	0	1	6(65)	1.00	1.00	0.68	0.00
0	1	0	1	0	0	1	6(66)	1.00	1.00	0.73	0.00
0	1	0	1	0	1	0	6(68)	0.87	0.00	1.00	1.00
0	0	0	1	1	1	0	5(69)	0.89	0.00	1.00	1.00
0	0	0	1	0	0	0	5(70)	0.88	0.00	1.00	1.00
0	1	0	1	1	1	0	4(71)	0.88	0.00	1.00	1.00
1	1	0	1	1	0	0	4(72)	0.92	0.00	1.00	1.00
0	1	1	1	0	1	0	4(73)	0.87	0.00	1.00	1.00
0	1	0	1	0	1	1	4(74)	1.00	1.00	0.73	0.00
0	0	1	1	0	0	1	4(75)	1.00	1.00	0.75	0.00
0	0	0	1	1	0	1	3(76)	1.00	1.00	0.79	0.00
1	0	0	1	1	0	0	3(77)	0.94	0.00	1.00	1.00
0	0	0	1	1	0	0	3(77)	0.91	0.00	1.00	1.00
0	1	1	1	0	1	1	3(78)	1.00	1.00	0.73	0.00
0	1	1	1	0	0	0	3(79)	0.91	0.00	1.00	1.00
1	1	0	1	0	0	0	3(80)	0.92	0.00	1.00	1.00
1	0	0	1	0	1	1	3(81)	1.00	1.00	0.70	0.00
0	0	0	1	0	0	1	3(82)	1.00	1.00	0.77	0.00
1	0	0	1	0	1	0	3(83)	0.90	0.00	1.00	1.00
0	0	0	0	0	1	0	3(83)	0.84	0.00	1.00	1.00

Table 7: Configurations for Korean teacher job satisfaction with profession

	Configuration				Configuration			
	HSP1	HSP2	HSP3	HSP4	LSP1	LSP2	LSP3	LSP4
PPCK 10			•	•			•	•
TSEG 2	•	•	•			•	•	•
TSEM 3				⊙	⊙	•		⊙
TSR 88	•	•	•	•	•	•	•	•
TI 1	•				•		•	
PDB 9		•		•	⊙	•		⊙
STV 6	●	●	●	●	⊗	⊗	⊗	⊗
Consistency	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Raw coverage	0.61	0.56	0.62	0.34	0.36	0.50	0.51	0.31
Unique coverage	0.02	0.01	0.02	0.01	0.02	0.02	0.06	0.01
Overall solution consistency	0.95				1.00			
Overall solution coverage	0.76				0.79			

Note. Black circles represent the presence of a condition, and circles with × indicate its absence. Large circles represent core conditions; small ones represent peripheral conditions. Blank spaces represent “don’t care.” HSPn describes high level of teachers’ job satisfaction with profession, and LSPn represents low level of teachers’ job satisfaction with profession

simultaneously, ‘1’ was assigned for configurations that met both criteria, and ‘0’ was allocated for configurations not meeting any of the two criteria. After the truth table was constructed, a standard analysis was performed, which procedure provides the complex, intermediate, and parsimonious solutions. Although three solutions differ in their degree of complexity, they are logically true because they do not contradict the available empirical information in the truth table (Ragin, 2008). Schneider and Wagemann (2012) suggest producing at least two solution formulas. One is based on simplifying assumptions on the logical remainders, leading to the most parsimonious solution. Another one without any such simplifying assumption always leads to a more complex solution. Both intermediate and parsimonious solutions were summarized in table 7.

Table 7 shows configurations for Korean teachers’ high job satisfaction with profession and their low job satisfaction with the profession. The configuration’s consistency should be above 0.8, and the raw coverage should not be less than 0.3 (Ragin, 2008). All configurations met these criteria, as depicted in Table 7. Also, Table 7 shows that the overall solution consistency of the configurations is appropriate, and the sufficient conditions can explain approximately 80% of the empirical evidence. Table 7 includes the presence of both core conditions and peripheral conditions, where the core condition indicates a stronger causal relationship with the outcome. In contrast, peripheral conditions indicate a weaker causal relationship with the outcome. The common core condition for high job satisfaction with the profession is the

presence of social perceptions of teacher value. The common core condition for low job satisfaction with the profession is the absence of social perceptions of teacher value.

More specifically, the four sufficient conditions leading to the high level of Korean teacher job satisfaction with profession are as follows. First, HJSP1 indicates that if the social perceptions of teacher value are high, ‘teachers’ efficacy in general’ is high, the teacher-student relations are positive, and the teacher’s climate is innovative, then job satisfaction with profession is high. HJSP2 shows that despite the professional development barriers, the high level of the social perceptions of teacher value combined with ‘teacher efficacy in general’ and the positive teacher-student relations is sufficient to the high job satisfaction with the high job satisfaction profession. HJSP3 indicates that if the social perceptions of teacher value are high, teachers’ pedagogical content knowledge is well-prepared, ‘teacher efficacy in general’ is high, and the teacher-student relations are positive, job satisfaction with profession is high. HJSP4 indicates that despite low self-efficacy in multicultural classrooms and professional development barriers, the high level of social perceptions of teacher value combined with well-prepared pedagogical content knowledge and positive teacher-student relations leads to high job satisfaction with the profession.

The four sufficient conditions leading to the low level of teacher job satisfaction with profession are as follows. LJSP1 indicates that the absence of the social perceptions of teacher value combined with low self-efficacy in multicultural classrooms is sufficient for the low job satisfaction with

profession, despite the support of professional development, positive teacher-student relations, and the teachers' innovative climate. LJSP2 indicates that the professional development barriers combined with the absence of the social perceptions of teacher value are sufficient for the low job satisfaction with the profession. LJSP3 describes that the absence of the social perceptions of teacher value is sufficient for the low job satisfaction with profession, **regardless of** well-prepared pedagogical content knowledge, high self-efficacy in general, the positive teacher-student relations, and teachers' innovative climate. LJSP4 indicates that despite well-prepared pedagogical content knowledge, high self-efficacy in general, the positive teacher-student relations, and the support for professional development, the low self-efficacy in multicultural classrooms combined with the absence of the social perceptions of teacher value is sufficient for the low job satisfaction with profession.

Table 8 shows that the overall consistency of sufficient conditions for high job satisfaction with work environment and low job satisfaction with work environment is appropriate. While the sufficient conditions for high job satisfaction with work environment can explain 73% of the empirical evidence, low job satisfaction with work environment can only explain about 50%. In Table 8, the low level of social perceptions of teacher value is a common core condition that can lower job satisfaction with the work environment, even if it is not a necessary condition. The five sufficient conditions for the high level of Korean teacher job satisfaction with work environment are as follows.

- HJSWE1 indicates that job satisfaction with work environment could be achieved within schools that meet a combination of four conditions; namely (1) well-prepared pedagogical content knowledge as a core condition (2) the high level of the social perceptions of teacher value as the other core condition (3) high self-efficacy in general, and (3) positive teacher-student relations. HJSWE2 shows that the positive teacher-student relations combined with high self-efficacy in general and the high level of the social perceptions of teacher value as core conditions are sufficient for high job satisfaction with work environment, despite professional development barriers and the absence of teachers' innovative climate. HJSWE3 indicates a different path by which to lead high job satisfaction with work environment is teachers' innovative climate and well-prepared pedagogical content knowledge, combined with high self-efficacy in general, the positive teacher-student relations, and the support for professional development.
- HJSWE4 indicates that well-prepared pedagogical content knowledge and the high level of social perceptions of teacher value are core conditions. Despite professional development barriers and the low self-efficacy in multicultural classes, the positive teacher-student relations combined with two core conditions can lead to high job satisfaction with the work environment. HJSWE5 depicts that high self-

Table 8: Configurations for Korean teacher job satisfaction with work environment

	Configuration					Configuration		
	HSE1	HSE2	HSE3	HSE4	HSE5	LSE1	LSE2	LSE3
PPCK 10	●		•	●		⊙	⊗	
TSEG 2	•	●	●		•	⊗	•	•
TSEM 3				⊙	●	⊙		•
TSR 88	•	•	•	•	•	•	•	•
TI 1		⊗	●		•			⊗
PDB 9		•	⊗	•				•
STV 6	●	●		●	●	⊗	⊗	⊗
Consistency	0.87	0.90	0.89	0.90	0.89	0.86	0.88	0.89
Raw coverage	0.59	0.34	0.32	0.37	0.49	0.38	0.37	0.45
Unique coverage	0.02	0.01	0.01	0.01	0.03	0.02	0.03	0.06
Overall solution consistency			0.85				0.87	
Overall solution coverage			0.73				0.49	

Note. Black circles represent the presence of a condition, and circles with × indicate its absence. Large circles represent core conditions; small ones represent peripheral conditions. Blank spaces represent “don’t care.” HSEn describes high level of teachers' job satisfaction with current school environment, and LSEn represents low level of teachers' job satisfaction with current school environment

efficacy in multicultural classrooms and the high level of the social perceptions of teacher value combined with the positive teacher-student relations and the teachers' innovative climate is a path that leads to high job satisfaction with work environment.

The three sufficient conditions for the low job satisfaction with work environment are as follows. LJSWE1 shows that underprepared pedagogical content knowledge and low self-efficacy in general combined with low self-efficacy in multicultural classrooms and the low level of social perceptions of teacher value lowered job satisfaction with work environment. LJSWE2 indicates that despite positive teacher-student relations and high self-efficacy in general, underprepared pedagogical content knowledge combined with the low level of social perceptions of teacher value can lead to low job satisfaction with the work environment. LJSWE3 describes that despite high self-efficacy in general, the high self-efficacy in multicultural classes, and the positive teacher-student relations, the absence of social perceptions of teacher value combined with professional development barriers and teachers' conventional climate is sufficient to lower job satisfaction with work environment.

DISCUSSION AND CONCLUSION

In this research, the high level of social perceptions of teacher value is a necessary condition for the occurrence of a high job satisfaction with the profession. In contrast, the absence of social perception of teacher value is a necessary condition for the occurrence of low job satisfaction with the profession. The presence of social perceptions of teacher value is the common core condition for high job satisfaction with profession, and the absence of social perceptions of teacher value is the common core condition for both a low job satisfaction with profession and low job satisfaction with work environment, social perception of teacher value was measured by salary, welfare, and teachers' influence on policy-making in this research. Lee and Cho (2005) reported that salary and welfare are essential factors for teacher job satisfaction.

Therefore, it implies that teacher job satisfaction can be improved when teachers recognize that they are provided with appropriate salaries and welfare to sustain their lives. Conversely, if salaries and welfare are lesser than teachers' subjective perception level, teacher job satisfaction may lower. Furthermore, the teachers' influence on policy-making can affect the fulfillment of social recognition needs among teachers. Therefore, it can be concluded that fair rewards such as salary, benefits, and social recognition are vital factors for Korean teacher job satisfaction.

It is worth noting the relationship between Korean teacher job satisfaction and teacher-student relations. First, the positive teacher-student relations revealed to be a peripheral

condition in all the paths leading to low job satisfaction and high job satisfaction, even if it is not a necessary condition for the occurrence of job satisfaction. Herzberg (1964) suggests that there are two dimensions of job satisfaction: motivator and hygiene factor. Motivators such as achievement, responsibility, recognition, the work itself, and advancement create satisfaction by fulfilling a person's needs for personal growth and meaning. Hygiene factors can only dissatisfy if they are absent or mishandled, whose topics include company policies, supervision, salary, interpersonal relations, and working conditions, which are not present in the actual job itself but surround the job.

In this study, the teacher-student relations were measured with two items; teachers and students usually get on well, and most teachers believe that the students' well-being is essential. Positive teacher-student relations are more than a simple interpersonal relation, and can be closely related to the teacher's responsibility and the work itself. Unlike interpersonal ties between colleagues, teacher-parent relations, and teacher-principal relations, teacher-student relations can be approached as a motivator. The inclusion of positive teacher-student relations in all paths leading to high teacher job satisfaction may have reflected this characteristic. However, teachers' interest in the students' well-being can be a condition of low job satisfaction depending on the students' well-being level. For example, the low students' well-being can be a stress factor for teachers who have a high interest in students and can lower teacher job satisfaction. If an in-depth study on the relationship between the level of students' well-being, teacher interest in students' well-being, teachers' stress, and teacher job satisfaction is conducted in the future, it will help to clarify why positive teacher-student relations are included in all paths leading to low job satisfaction work environment.

Regarding teacher self-efficacy in multicultural classrooms, low self-efficacy was included in the different paths leading to low job satisfaction with the profession. On the contrary, high self-efficacy was not included in any paths leading to high job satisfaction with the profession. This result can be approached as an asymmetry characteristic of the social phenomenon, but an in-depth study to explain this phenomenon will need to be done in the future. Unlike job satisfaction with profession, the high self-efficacy was included in a path for the occurrence of high job satisfaction with work environment. The Korean Ministry of Education has encouraged teachers to implement multicultural education since the 2007 revised national curriculum and has run multicultural research schools. Therefore, teachers with high self-efficacy can actively implement multicultural education and get recognition among colleagues and principals. These recognitions can increase job satisfaction with work environment. On the other hand, the low level was included as a condition for the occurrence of low job satisfaction with the work environment. Students from

multicultural backgrounds vary considerably from school to school in Korean secondary schools. The composition ratio of students from multicultural backgrounds may also affect job satisfaction with work environment. If this variable is included as a variable for the occurrence of job satisfaction with the work environment, it will be possible to explain job satisfaction in Korean multicultural secondary schools.

The findings revealed Korean teacher job satisfaction in multicultural secondary schools by outlining several combinations of factors that lead to paths explaining job satisfaction with profession and job satisfaction with work environment. It has been reported that teacher job satisfaction is influenced by a wide range of factors related to the internal and external factors, including professional development, efficacy, teacher climate, principal leadership style, teacher-student relations, and personnel relations (Caprara, Barbaranelli, Borgogni, & Steca, 2003; Čech, Cakirpaloglu, & Gillová, 2021; Choi, Kwon, Kim, & Park, 2013; Collie, Shapka, & Perry, 2012; Fuming & Jiliang, 2008; Gkolia, Belias, & Koustelios, 2014; Hwang, 2012; Kim & An, 2018; Klassen & Chiu, 2010; Klassen, Usher, & Bong, 2010; Kouni, Koutsoukos, & Panta, 2018; Lee & Lee, 2010; Lee, & You, 2020; Lee, 2007; Lee, Kang, & Kim, 2017; León et al, 2021; Meagher, 2011; Naz, 2017; Rapti & Karaj, 2012; Tien, 2018; Yildiz, 2021).

These results have been founded out using multiple regression analysis, which has focused on the effect of each independent variable on teacher job satisfaction, while the rest independent variables are controlled. This research findings support the prior studies exploring the relationship between teacher job satisfaction and each single variable. However, this research identified different pathways for Korean teachers to achieve job satisfaction with profession and job satisfaction with work environment in multicultural secondary schools and revealed the necessary condition for job satisfaction with profession, using fsQCA. In addition, this study confirmed that teachers could achieve job satisfaction only when a variable combined with other variables, and neither variable is sufficient by itself, which is the originality of this study.

Along with significant research findings, this research has some limitations. Firstly, this research scope is confined to the variables measured in TALIS 2018. The results of any fsQCA are dependent on the variables included in the research. The variation of sets of variables produces different property spaces and hence potentially different configurations in fsQCA. Therefore, these variables such as school principal's leadership, teacher-parent relations, promotion opportunity, and cooperative professional development need to be included in future research.

Secondly, research findings are based on a self-reported questionnaire method. Other data sources such as data from interviews with the teachers need to be included in future research to get an insight into the teacher's job satisfaction.

Thirdly, the sample of this study is Korean secondary school teachers, which may reduce external validity, the extent to which the findings can be generalized to the other country. Finally, an ethnically diverse student population accounts for two percent of the nation's total student population in this research. Research to identify different combinations leading to job satisfaction in counties with a high proportion of students from multicultural backgrounds needs to be carried out in the future.

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