

Development and Validity Testing of the Workplace Parent Index (WPI): Assessment of Family-Friendly Practice

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Running Head Title: The Workplace Parenthood Index

Significance to Clinical Practice: Employers, employees, and government agencies can use the Workplace Parent Index (WPI) to assess corporate policy and programs for parenthood at different stages of parenting, beginning with pregnancy. The WPI can identify gaps in related programs within companies and aid in prioritizing high-impact interventions for parenthood at the workplace.

Abstract

Objective: We aimed to develop the Workplace Parent Index (WPI) as an assessment tool of family-friendly practice in the workplace and validate its psychometric properties.

Methods: The development of the WPI included three phases: item generation, scale construction, and field testing. Participants were 1,000 parents, aged 18 or more years old, who completed the WPI online and measures of competency of parenthood, life satisfaction, and positive growth after experiencing a traumatic event.

Results: The WPI comprised 80 items and five domains: Governance and Infrastructure, Planning and Communications, Action-Pregnancy and Childbirth, Action-Childrearing, and Monitoring and Feedback. All subscales of the WPI demonstrated high internal consistency reliability and correlated with other scales as expected in support of concurrent and predictive validity.

Conclusions: The WPI demonstrated excellent psychometric properties that can be used to assess comprehensive family-friendly practices in the workplace when addressing the need and prioritizing the allocation of resources for workplace parenthood program initiatives.

Keywords: Parenthood, Workplace, Workplace Parent Index, Validation, family-friendliness

ACCEPTED

BACKGROUND

Why is building a family-friendly workplace important? Employers and employees believe that family-friendly workplaces create a quality environment for work-life, impact employee health, keep companies strong, improve productivity, and enhance employee loyalty and commitment.¹⁻⁵ The Organization for Economic Co-operation and Development (OECD) defined family-friendly workplace practices as “those practices that facilitate the reconciliation of work and family life, and which firms introduce to complement statutory requirements.”⁵ Family-friendly practices such as paid parental leave, flexible work schedules, provision of onsite childcare, and breastfeeding accommodations provide stability and are therefore sought after by younger and family-oriented employees. The family-friendly practices at workplaces influence parents’ ability to care for their children, especially for low-income workers and families in vulnerable situations; consequently, their quality of life outside of work is inevitably influenced.⁶ Therefore, the workplace should establish family-friendly environments where parents can fulfill their responsibilities and make a vital contribution to their children.^{7,8} If these practices are being encouraged, they can also serve as an essential branding link and provide a competitive edge over other companies.¹⁻³

However, family-friendly policies and health systems have not been able to prevent psychological harm during birth and even childcare, and the resulting psychological trauma is an international concern for childbearing women globally.⁹⁻¹¹ The family-friendly policies, such as paid parental leave, breastfeeding and childcare support, and provision of high-quality preschool education, practiced in the 41 countries of the OECD or the European Union, encompass various parental needs.¹² However, it was found that just in the U.S., 50% of fathers and 75% of mothers passed up work opportunities, switched jobs, or quit their job to care for their children, mainly because over half of the surveyed companies did not meet the United Nations Children’s Fund’s (UNICEF) recommendation of 18 weeks maternity leave and were deemed inadequate to support working parents.^{2,5} Despite the fact that UNICEF recommended combined parental leave of at least six months for working parents and the demand for more comprehensive parent support programs has been growing, it is still challenging to find workplaces that allow parents to combine work with their responsibilities and care at home.^{2,13} From a health-related perspective, the varying degrees of accessibility to family-friendly workplace practices are also alarming. It may induce inequality from the early stages of infant development as parents do not share accessibility to family-friendly workplace practices to the same extent.⁴ Because low-income workers and families in vulnerable situations are less likely to benefit from the family-friendly practices of workplaces, it is crucial for the government and workplace to collaboratively establish family-friendly environments where all parents can fulfill their responsibilities and make an important contribution to their children and at work.^{2,7}

When developing a family-friendly workplace assessment tool, it is critical to collectively evaluate the structure, policies, activities, culture, and environment to ensure that the family-friendly practices are effectively implemented.⁶ In reviewing the literature, we found a few assessment tools that employers can use to examine family-friendly policies and practices at their workplace.^{2,14-17} While most assessment tools focus on childhood

development,^{3,15,18-20} and there is one that focuses mainly on surrounding communities,¹⁶ there are only a few assessment tools that provide a comprehensive understanding of family-friendly workplace policies and practices.^{2,6,17} Nevertheless, there is still a need for more comprehensive research on measures that assess strategies that positively impact workers, families, and businesses by having family-friendly workplace policies.²

Previously, we developed the Worksite Health Index (WHI) to assess comprehensive worksite health programs in line with the Centers for Disease Control and Prevention Worksite Health ScoreCard.²¹ Based on the WHI, in the current study we aimed to develop and evaluate the psychometric properties of the Workplace Parent Index (WPI), an assessment tool that can be used to capture the totality of the family-friendly policies and activities practiced in various workplaces. The WPI could have utility for evaluating the effect of family-friendly policies and activities across dimensions of workplaces, homes, communities, and countries.

METHODS

1. Study design

The development of the WPI included three phases: (1) item generation, (2) domain and scale construction, and (3) validation with field testing.²² This study was approved by the Institutional Review Board of Seoul National University Hospital.

2.1. Phase I: Item generation

Phase I involved organizing a list of relevant indicators for family-friendly workplaces and work-family programs. We first reviewed published indices, such as the Modern Families Index²³ and the Korean government's Family Friendliness Index.²⁴ We then considered the results of the prior study on the development of the WHI. The results indicated that each domain of the WHI was significantly associated with employees' health status, absence, and financial outcome. Thus, it was appropriate to use the WHI as a reference in developing assessment items for the WPI.²²

We conducted interviews with ten professionals who are considered experts in the relevant fields (two family studies professors, one psychology professor, three government officials in charge of childcare support, four social work-related experts). A semi-structured questionnaire was used to explore their experiences and insights on problems and solutions in terms of parenting challenges. We were able to generate 198 items for the WPI that comprehensively tackle the current situation of family-friendly policies and practices in the workplace. We then summarized the topics to reconstruct the framework of the WPI, derived initially from the WHI.

We maintained five domains from the WHI that were designed to reflect the following issues: (1) *structural organization*, which included "business philosophy," "policy," "infrastructure and culture," "budget," and "guideline"; (2) *investigation, planning, and communication*, which included "needs assessment," "status evaluation," "planning," and "communication"; (3) implementation regarding *pregnant employee support program* that encompasses "physical," "mental," "social," and "spiritual" aspects during pregnancy and childbirth; (4) *parent work support program*, including "physical,"

“mental,” “social,” and “spiritual” aspects; and (5) *monitoring and feedback*, which comprised a “monitoring” and “feedback system.” All five domains were classified as structure or process types depending on whether they evaluated the structure's effectiveness or how well the programs were operating.

Pregnant employee support program covers various support programs as follows: (1) health screening, (2) postpartum depression, (3) parental leave, (4) pregnancy discrimination, (5) pregnant employee community, and (6) parent education program. Similarly, parent employee support program covers various support programs as follows: (1) health screening for parents and infants, (2) parental depression, (3) parental leave and flexible working, (4) workplace daycare, (5) parental discrimination, (6) parent employee community, and (7) parent education program. These family-friendly policies and programs are recommended to be integrated into the value chain and Environmental, Social, and Governance (ESG) performance indicators.^{2,6}

2.2. Phase II: Item construction

The related issues collected from the literature review and interviews were converted into specific questionnaires that referred to the field experience of each expert. After we constructed a list of provisional questions for the WPI, we used the Delphi method originally developed in 1967 by the RAND Corporation.²⁵ A group of 22 experts anonymously checked each item's validity and feasibility based on a five-point Likert scale and subsequently provided feedback. To make the final decision, we cycled through the Delphi process twice, and items remained on the list only if the four following criteria were met: (1) validity mean score > 3 points, (2) feasibility mean score > 2.5 points, (3) prevalence ratio of validity mean score less than 3 points and > 25%, and (4) prevalence ratio of feasibility mean score less than 3 points and > 25%. Items that did not meet these four criteria were deleted. Utilizing this method, we deleted 118 items and reduced the first version of the WPI to 80 items. During the elimination process, some support programs mentioned above, such as pregnant and parent employee community and parent education programs, were excluded in the final version of the WPI.

Therefore, based on the literature review, WHI²², and extensive interviews with experts of various fields, we generated five domains for the WPI as follows: Governance and Infrastructure (15 items), Planning and Communications (3 items), Action-Pregnancy and Childbirth (20 items), Action-Childrearing (33 items), and Monitoring and Feedback (9 items).

2.3. Phase III: Field testing

To test the validity and reliability of the WPI, we randomly pooled parents from an online database from December of 2020 to January of 2021. Survey invitations were sent via e-mail to 22,772 people by The KSTAT Co., Ltd. (Seoul, Korea), of which 2,623 people (11.5%) responded. However, 1,496 people (57%) who did not meet the eligibility criteria were excluded from the study. The eligibility criteria were as follows: (1) have a child or currently pregnant, (2) aged 18 years or older, (3) able to read and understand Korean, and (4) have access to a computer to complete the online questionnaire. The final sample consisted of 1,000 participants (38.1% of 2,623 people, 4.4% of 22,772 people) who completed all

questionnaires.

In addition to the WPI, participants completed questionnaires to evaluate concurrent and predictive validity. We hypothesized that companies with excellent practices in the domains assessed by the WPI and its subscales would have employees who experience high parenting competency, high goal achievement, less decisional conflict, positive growth from traumatic experiences, better health status, and high life satisfaction. The survey included the following additional measures to test our hypothesis: Smart Management Strategy Assessment Tool for Parentship (SAT-Parentship) to assess parenting competency,²⁶ Satisfaction With Life Scale (SWLS) to assess life satisfaction,²⁷ Post-Traumatic Growth Inventory (PTGI) to assess positive growth after a traumatic event,²⁸ and a measure of Maslow's hierarchy of needs to assess the extent to which human needs have been met.²⁹

3. Statistical analyses

To evaluate the validity of the WPI, exploratory factor analysis using principal components with a varimax rotation was conducted. Cronbach's α was calculated to determine internal consistency and reliability of the WPI domains and its subscales. We regarded an $\alpha \geq 0.70$ as adequate in collectively summing up responses to a single score. We calculated Pearson correlations between the WPI and SAT-Parentship, SWLS, and PTGI by domains to measure the strength and direction of the relationship between variables.

We tested our hypothesis and evaluated the validity of the WPI by additionally analyzing the associations of the WPI subscale scores with SAT-Parentship, SWLS, and PTGI scores, parental leave, and Maslow's hierarchy of needs. The measures of SAT-Parentship and Maslow's hierarchy of needs used a four-point Likert scale for the item responses. The item response options for the SWLS and PTGI were the same as on the original scales. For the SWLS, participants completed questionnaires using a seven-point Likert scale scoring system, with 1 being 'strongly disagree' and 7 being 'strongly agree'. Once all five statements scored, we calculated a final score which provided an indication of participants' overall satisfaction with life. For the PTGI, participants were asked to complete a 21-item questionnaire using a six-point Likert scale measure, with 0 being 'I did not experience this change as a result of my crisis' and 5 being 'I experienced this change to a very great degree as a result of my crisis.' The summation of items yielded a total growth score ranging from 0 to 105. The total score indicated the degree to which the statements were true due to participants' crises, and higher scores were considered an indication of greater positive growth. Multiple logistic regression models adjusted for biological and socioeconomic factors such as age, sex, marital status, employment type, and income. The parental leave item response options were "never taken parental leave" and "have taken parental leave." The six stages of Maslow's hierarchy of needs (physiological, safety, love and belonging, esteem, self-actualization, and self-transcendence) were each assessed for their association with WPI scores. All calculated *P* values were two-sided, with the significance level set at $P < 0.05$. We used STATA software 13.1 (StataCorp. 2013. Stata Statistical Software: Release 13. College Station, TX: StataCorp L.P.) and IBM SPSS Statistics for Windows version 26.0 (SPSS Inc., Chicago, IL, USA).

RESULTS

1. Factor analysis

Factor analysis resulted in the following number of subscales associated with the five domains: two subscales for Governance and Infrastructure, one subscale for Planning and Communications, two subscales for Action-Pregnancy and Childbirth, two subscales for Action-Childrearing, and one subscale for Monitoring and Feedback. The WPI items' statistics with the item-to-factor loadings for all items are shown in Appendices 1-5, <http://links.lww.com/JOM/B7>.

2. Reliability

Table 1 summarizes the descriptive statistics of the five domains and related subscales of the WPI. For better understanding, all scores were converted to a 0–100 scale. For all scales, item responses were coded appropriately so that a higher score represented a better practice level in accordance with the international standard scoring manual.³⁰ All domains and subscales of the WPI showed a high degree of internal consistency reliability with Cronbach's α ranging from 0.83 to 0.98 (Table 1).

3. Comparison with SAT-Parentship, SWLS, and PTGI

As expected, all domain and subscale scores of the WPI significantly and positively correlated with SAT-Parentship ([*r*] range, 0.34–0.38), SWLS ([*r*] range, 0.29–0.32), and PTGI ([*r*] range, 0.28–0.33) scores (Table 2).

4. Comparison with parental leave

Parental leave showed a significant and positive association with companies that had good family-friendly practices as measured by the domains and subscales of the WPI (score > 50) compared to the parental leave associated with companies that had poor family-friendly practices (adjusted odds ratio [aOR] range, 1.39–1.90) (Table 3).

5. Comparison with Maslow's hierarchy of needs

Companies with good family-friendly practices based on the WPI total scale score (WPI score > 50) showed a significant and positive association with most of attitudes or desires toward human needs, except for safety and love and belonging, when compared to those with companies with poor practices (aOR range, 1.48–1.92). With regard to the WPI domains, companies with good family-friendly practices showed a significant and positive association with self-actualization and self-transcendence compared to companies with poor practices (aOR range, 1.57–1.79 and 1.63–1.87, respectively) (Table 4).

DISCUSSION

The WPI consists of 80 items in 5 domains and 16 subscales that assess key policy and practice programs for parenthood at the workplace. The applicability of the WPI as a criterion for evaluating diversified family-friendly practices at the workplace was demonstrated by examining its psychometric properties. We examined the WPI's factor structure, internal consistency reliability, and predictive validity (i.e., the degree to which the WPI score is predictive of parental leave). Employers, employees, and government agencies can use the WPI to assess corporate policy and programs for parenthood at different stages of parenting, beginning with pregnancy. The WPI will also be publicly available to identify gaps in related

programs within companies and aid in prioritizing high-impact interventions for parenthood at the workplace.

The current study on the development and evaluation of the WPI had several key findings. First, family-friendly practices in the workplace were significantly associated with the overall management strategy for parenting of the working parent, their life satisfaction, and post-traumatic growth.² These findings suggest that it is highly likely that family-friendly workplaces empower working parents, enhance life satisfaction, increase post-traumatic growth, and create a more pleasant work environment for employees.¹⁴ Although we did not evaluate the quality of parental care and its outcomes on children, we can safely assume that family-friendly practices may also influence working parents' ability to care for their children.⁶ Additionally, it is important to note that the WPI was associated with parental leave. Companies with family-friendly practices are involved with providing an environment for employees that is conducive to taking a parental leave of absence which may consequently impact other related factors of parenting. It may also create a sense of social inequality in the community between those who are able to take a parental leave of absence and those who are not able to due to their workplaces.

A majority of employers and employees agree that family-friendly practices benefit companies' attraction and keep companies productive and strong, supporting their beliefs that family-friendly practices are mutually beneficial for employers and employees and can provide a competitive edge in the industry market.^{1,8,14} Interestingly, family-friendly practices were positively associated with fulfilling human needs, based on Maslow's hierarchy of needs.²⁹ Such a result brings forth a plausible idea that the companies and working parents are in a mutually benefiting relationship where working parents who achieve self-actualization can also meet companies' goals. Companies that invest in helping their employees achieve their goals and motivation to do so would likely have employees investing in the company's ability to achieve its goals. Therefore, the management group's roles are essential in building a self-actualized corporate culture, because the more family-friendly the workplace, the more people can have a positive outlook on pregnancy and childrearing and its effect on self-actualization.

Although further research is needed to measure the effects of policies, returns on investments, and impact on children and families, the WPI can be used as a comprehensive assessment tool for family-friendly practice integrated into the value chain or total quality management.^{2,31}

It is important to note that the strongest driver of change in family-friendly practice lies in government support.^{1,2} Through national legislation and government support, employers and employees can readily utilize the WPI to identify hidden issues and prioritize what they need from each other, and consequently perform their best at work.^{2,3}

Limitations

The present study has several limitations that deserve mentioning. First, we did not compare parents' assessment with employers' assessment from each organization for inter-rater reliability. Second, as a cross-sectional study, the findings are limited to a point in time. Future research should use the WPI to examine the benefits of family-friendly practices

programs over time through longitudinal research designs. Third, as this study was conducted only in Korea, generalization of the results is limited. Cross-cultural studies are needed to examine the validity of the WPI across cultures. WPI could be applicable to other countries by cross-cultural studies. Fourth, it is recognized that the workplace should be family-friendly, and this study focused on the difficulties faced by parents in the family during pregnancy and while parenting young children. However, this study did not examine the difficulties of employees caring for young-adult children or elderly parents. In the future, it is necessary to develop a tool to evaluate family-friendly workplace practices of companies that understand and support the difficulties of employees caring for young-adult children and elderly parents. Finally, although family-friendly practices can have an influence on childcare, we were not able to evaluate the outcomes of children. Further studies using the WPI are needed to comprehensively evaluate the effect of companies' family-friendly practices on the quality and outcomes of childcare.

Conclusion

The WPI demonstrated excellent psychometric properties and can be used to as a tool to comprehensively assess family-friendly workplace policies and practices and help prioritize the need to promote a positive change for parenthood.

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Table 1. Descriptive statistics and internal consistency reliability of the WPI domains and subscales (N=1000).

Domain	Subscale	Mean (SD)	Cronbach's α
	Total (15 items)		.943
Governance and Infrastructure	Factor 1: Policies, infrastructure, budget, and guidelines (items 7–15)	38.17 (4.22)	.889
	Factor 2: Governance and leadership (items 1–6)	37.27 (1.04)	.865
Planning & Communications	Total (3 items)		.834
	Factor 1: Communication (items 16–18)	32.80 (2.42)	.834
Action-Pregnancy and Childbirth	Total (20 items)		.960
	Factor 1: Physiological/mental/sociological support (items 13, 26, 28, 29, 36–38)	36.33 (3.29)	.935
	Factor 2: Positive work environment (items 24, 25, 27, 30–35)	40.39 (4.06)	.923
Action-Childrearing	Total (33 items)		.975
	Factor 1: Family centered work environment (items 42, 54–56)	37.25 (3.04)	.959
	Factor 2: Daycare support (items 39-41, 43–53)	34.80 (1.80)	.962
Monitoring and Feedback	Total (9 items)		.951
	Factor 1: Monitoring and Feedback (items 72–80)	32.07 (0.62)	.951

WPI: Work Parenthood Index. Range of scores is 0–100.

Table 2. Pearson correlations between WPI total and domain scores, SAT-Parentship, SWLS, and PTGI scores in childrearing parents (N=1000).

WPI Total Scale and Domains	SAT-Parentship Total	SWLS	PTGI
Total Scale	.378*	.324*	.332*
Governance and Infrastructure	.370*	.297*	.316*
Planning & Communications	.344*	.308*	.298*
Action-Pregnancy and Childbirth	.338*	.292*	.280*
Action-Childrearing	.342*	.311*	.307*
Monitoring and Feedback	.349*	.298*	.284*

WPI: Work Parentship Index; SAT-Parentship: Smart Management Strategy Assessment Tool-Parentship;

SWLS: Satisfaction With Life Scale, PTGI: Post-Traumatic Growth Inventory.

* $P < 0.01$.

Table 3. Adjusted odds ratios of WPI differentiation according to parental leave.

			Have taken parental leave (ref = never taken parental leave)	
WPI Total Scale and Domains	Score	%	aOR	95% CI
Total Scale	≤50	71.1	1.00 (ref)	
	>50	28.9	1.75†	1.31-2.33
Governance and Infrastructure	≤50	70.9	1.00 (ref)	
	>50	29.1	1.39*	1.04-1.84
Planning & Communications	≤50	72.3	1.00 (ref)	
	>50	27.7	1.87†	1.39-2.50
Action-Pregnancy and Childbirth	≤50	68.1	1.00 (ref)	
	>50	31.9	1.90†	1.44-2.52
Action-Childrearing	≤50	69.6	1.00 (ref)	
	>50	30.4	1.59†	1.20-2.11
Monitoring and Feedback	≤50	73.0	1.00 (ref)	
	>50	27.0	1.59†	1.18-2.13

WPI: Work Parentship Index; aOR: adjusted odds ratio. Adjusted for biological (i.e., sex and age) and socioeconomic (marital status, employment type, and income) factors.

* $p < 0.05$. † $p < 0.01$.

Table 4. Adjusted odds ratios of different stages of Maslow's hierarchy of needs based on WPI total and domain scores.

WPI Total Scale and Domains	Score	Physiological	Safety	Love and belonging	Esteem	Self-actualization	Self-transcendence
		aOR (95% CI)	aOR (95% CI)	aOR (95% CI)	aOR (95% CI)	aOR (95% CI)	aOR (95% CI)
Total Scale	≤50	1.00 (ref)	1.00 (ref)	1.00 (ref)	1.00 (ref)	1.00 (ref)	1.00 (ref)
	>50	1.48(1.07-2.03)*	.952(.65-1.39)	.702(.47-1.06)	1.57(1.08-2.29)*	1.92(1.38-2.68)†	1.82(1.32-2.51)†
Governance and Infrastructure	≤50	1.00 (ref)	1.00 (ref)	1.00 (ref)	1.00 (ref)	1.00 (ref)	1.00 (ref)
	>50	1.17(.86-1.58)	.968(.66-1.41)	.816(.54-1.23)	1.24(.86-1.77)	1.59(1.15-2.19)†	1.63(1.19-2.24)†
Planning & Communications	≤50	1.00 (ref)	1.00 (ref)	1.00 (ref)	1.00 (ref)	1.00 (ref)	1.00 (ref)
	>50	1.62(1.17-2.24)†	.962(.657-1.41)	.709(.47-1.07)	1.37(.95-1.99)	1.67(1.20-2.31)†	1.84(1.33-2.56)†
Action-Pregnancy and Childbirth	≤50	1.00 (ref)	1.00 (ref)	1.00 (ref)	1.00 (ref)	1.00 (ref)	1.00 (ref)
	>50	1.30(.958-1.76)	1.10(.76-1.60)	.75(.50-1.13)	1.07(.76-1.51)	1.57(1.15-2.15)†	1.72(1.26-2.35)†
Action-Childrearing	≤50	1.00 (ref)	1.00 (ref)	1.00 (ref)	1.00 (ref)	1.00 (ref)	1.00 (ref)
	>50	1.58(1.16-2.17)†	.803(.56-1.16)	.643(.43-.961)*	1.42(.99-2.05)	1.79(1.30-2.47)†	1.76(1.28-2.41)†
Monitoring and Feedback	≤50	1.00 (ref)	1.00 (ref)	1.00 (ref)	1.00 (ref)	1.00 (ref)	1.00 (ref)
	>50	1.47(1.06-2.04)*	.92(.62-1.36)	.70(.46-1.06)	1.34(.92-1.96)	1.70(1.21-2.37)†	1.87(1.34-2.61)†

WPI: Work Partnership Index; aOR: adjusted odds ratio. Adjusted for biological (i.e., sex and age) and socioeconomic (marital status, employment type, and income) factors.

* $p < 0.05$. † $p < 0.01$.