



# Analysis of Differential Item Functioning (DIF) on the Work-Life Balance Scale

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**Abstract.** The COVID-19 pandemic has provided a new work system. It is called work from home. This phenomenon continues after the COVID-19 pandemic. It gives rise to a business sector where workers can work from home. This phenomenon raises problems for men and women related to work-life balance. Therefore, the existence of new phenomena and their problems will require the development of analyses in measurement to suit the existing phenomena and problems. One is a study of item bias on the work-life balance scale based on gender and age in the context of working from home. This research aims to determine whether there was an item bias on work-life balance based on age and gender. The sample of this research amounted to 130 workers consisting of 65 female workers and 65 male workers with an age range from 19–51 years. The sampling technique used was the quota sampling technique. The analysis carried out was the Differential Item Functioning (DIF) analysis on the work-life balance scale measuring instrument. The research shows that the item has a probability value below 0.05, i.e., 0.044 in item no.4, based on gender. Furthermore, two items have a probability value below 0.05, i.e., 0.031 (item no.2) and 0.003 (item no.15), based on age. Therefore, it can be concluded that there is item bias based on gender and age.

**Keywords:** Differential Item Functioning (DIF) · Work-Life Balance · Work from home

## 1 Introduction

The COVID-19 pandemic has created a new phenomenon in the work system. Workers, who initially worked in the office with a certain room, had to be forced to work from home to minimize the transmission of viruses. According to Mungkasa (2020), work from home refers to telecommunicating, teleworking, and remote working, which is one type of flexible work choice. This flexibility can be interpreted as the ability of workers to control themselves related to the duration of work, the workplace far from the office, and the work schedule offered by the company.

The work-from-home activity gives workers a dual role at home. The dual role initially carried out at home and outside the home (office) had to be done in the same location when they worked from home. Facing this condition, they need a work-life balance. Bloom et al. (2015) revealed that companies with employees who work from home could cause two problems. The first relates to the productivity and profitability

of the company. The second relates to poor balance at work. Dua & Hyronimus (2020) stated that both problems could be solved by working from home. However, suppose the implementation of work-from-home cannot be handled properly. In that case, it will negatively impact the workers' work-life balance. Research and measurement of work-life balance is not something new in psychology. However, with the COVID-19 pandemic and the emergence of working from home, it is necessary to re-examine the existing measuring tools.

Moreover, working from home continues even though it is already an endemic condition. The habit during the COVID-19 pandemic has become a new habit for people in the work system. For example, some business units do work-from-home activities without a specific office. This phenomenon will make working from home not a momentary phenomenon during a pandemic. Still, it will remain a result of habits.

Therefore, analysis and testing need to be improved on the items of the work-life balance scale. One of them is test item bias. It can be explained by the result of the research of Putra Fajar (2020). He found that physiological problems arise from blood pressure and pulse rate fluctuating because they are triggered by stress and tension during adjustment to working from home. In addition, another research was conducted by Andriyana & Supriyansyah (2021). They found that the implementation of working from home during the COVID-19 pandemic is prone to causing problems, especially those related to family problems, the distraction of concentration, inadequate facilities and infrastructure, and time problems that cause stress at work.

From the gender aspect, working from home raises different problems. Dua & Hyronimus (2020) said that female workers, who cannot balance their personal and work lives, are more likely to experience stress due to the demands of roles that must be carried out simultaneously. A preliminary study conducted by the researchers found that during work from home, female workers feel that their work is disrupted because they have to divide their time between office work and housework. Meanwhile, male workers feel that working from home can eliminate the limitation of working hours, so they have irregular break schedules and have difficulty focusing because they feel disturbed by activities at home. Poulouse and Susdarsan (2014) summarized four factors that influence work-life balance. They are; (1) individual factor that consists of personality, welfare, and emotional intelligence; (2) organizational factor, which includes role conflict, technology, job stress, organizational support, etc.; (3) social factor, which includes family and social support; (4) other factors such as age, gender, marital status, parental status, employee level, type of work, etc.

Based on the problems above, the bias analysis of the measuring instrument needs to be re-examined. As a scientific development, the test will be conducted not only on men and women but also on the age level of workers.

## 2 Method

The variable of this research was work-life balance based on gender and age. The sample of this research amounted to 130 workers, consisting of 65 female workers and 65 male workers with an age range of 19–51 years. The sampling technique used was the quota sampling technique. The data collection instrument used was the work-life balance scale

**Table 1.** Results of Analysis of DIF of Items Based on Gender

Prob	Item
0,168	1
0,661	2
0,656	3
<b>0,044</b>	<b>4</b>
0,611	5
0,376	6
0,492	7
0,535	8
0,478	9
0,158	10
0,391	11
0,877	12
0,598	13
0,771	14
0,299	15

from Fisher et al. (2009), adapted by Gunawan (2019), with 17 items. Then, after being tested, it became 15 items Ibrahim (2022).

### 3 Result and Discussion

In this research, the analysis carried out was of Differential Item Functioning (DIF) on a work-life balance scale measuring instrument. DIF describes the ability of an item to give different results in two or more groups with the same ability Osterlind (2010). The existence of item bias can be seen through the DIF. It is necessary because item bias can interfere with the measurement scores' validity. DIF analysis in this research was based on gender and age. The age was divided into under 30 years and above 30 years.

Items with a probability value below 0.05 indicate a bias Sumintono and Widhiarso (2014). Based on the result in Table 1, the item on the work-life balance scale containing DIF based on gender is item no.4, which reads, "My personal life has deteriorated because of my work." It shows that in item no.4, male and female subjects give different responses.

From the result of Table 2, the items from the work-life balance scale containing DIF based on age are items no.2 and no.15. Item no.2 reads, "My work interferes with my break schedule." Item no.15 reads, "The work I do, can help me to overcome personal problems."

**Table 2.** Results of Analysis of DIF of Items Based on Age

<b>Prob</b>	<b>Item</b>
0,246	1
<b>0,031</b>	<b>2</b>
0,134	3
1,000	4
0,213	5
1,000	6
0,238	7
0,133	8
0,788	9
0,179	10
0,123	11
0,096	12
0,580	13
0,761	14
<b>0,003</b>	<b>15</b>

This research aims to determine whether item bias on the work-life balance scale is based on gender and age. Item bias based on gender is found in item no.4, which reads, “my personal life has deteriorated because of my work.” Male and female subjects give different responses. Poulouse and Susdarsan (2014) said that one of the factors that affect work-life balance is gender. In this research, the bias appears in the male and female gender. It is caused by the roles and demands in the family. In line with this, the result of research conducted by Dua & Hyronmus (2020) stated that the problem for women in carrying out their duties is difficulty dividing their time between the office and home tasks. Meanwhile, for men, the source of their problems is related to break time at work and distractions that arise at home, interfering with their focus. Therefore, the different problems during work from home can lead to bias and different choices between men and women.

Based on age, there is a bias in item no.2 and item no.15. Item no.2 relates to “work that interferes with the break schedule”. In contrast, item no.15 relates to “the work done, can help to overcome personal problems”. The age aspect is related to the development stage. In the theory of social development, Erikson stated that in the age range of 20–30 years, a human enters the development stage of intimacy vs. isolation. At this stage, an individual is in need and builds close relationships with family, friends, and relationships of the opposite gender.

Meanwhile, in the age range of 40–50, the individual enters the development phase of generativity vs. stagnation. The development task in this phase is being productive at work and demanding to succeed for the family or the next generation (Santrock,

2012). Differences in the task and developmental stage can make an individual choose a different answer on the same item. So that bias is found in item no.2 and item no.15. Likewise, regarding the level of work, the age group above 30 years has reached the career stage at the manager level and has been married. The age group under 30 is still pursuing a career and is not married. It follows the opinion of Poulouse & Susdarsan (2014). They said that one factor that affects work-life balance is age, level of work, and marital status.

This research shows a bias of items on the work-life balance scale based on gender. The bias appears in item no.4 because men and women respond differently. There is also an item bias based on age group, i.e., item no.2 and item no.5, which relates to the item about disrupting the break schedule and the item about helping to overcome problems. Thus, it can be concluded that in the work-life balance scale, item bias is based on gender and age.

The limitation of this research is only for workers who work from home. It could not be generalized to workers who work in the office. In addition, the item tested in this research is the work-life balance scale based on Fisher's theory, so it cannot be generalized to all items and scales developed by the researcher or other measurement figures.

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