#### CHALLENGE JOB DEMANDS AND WORK-LIFE BALANCE: BUFFERING ROLE OF WORK-RELATED FLOW AMONG UNIVERSITY UNDERGRADUATE STUDENTS

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**ABSTRACT:** The study investigated the moderating role of work-related flow on the relationship between challenge job demands and work-life balance among undergraduate students. Cross-sectional data were collected from undergraduate students of music and fine and applied arts from two federal universities in Southeastern Nigeria. The participants' ages ranged from 18-30 years with a mean age of 22.08 (*SD*=2.87). They consisted of 54 (55%) male and 44 (45%) female students. The results of the moderation analysis using PROCESS Macro V4.2 showed that contrary to our hypothesis 1, challenge job demands positively associated with work-life balance, suggesting that higher job challenge demands was linked to better work-life balance. The results also indicated that work-related flow positively associated with work-life balance. Work-related flow significantly moderated the relationship between challenge job demands and work-life balance. At lower levels of work-related flow, challenge job demands had a stronger positive effect on work-life balance, but this effect diminished at higher levels of flow experience, supporting our hypothesis. We conclude that challenge job demands leads to positive individual outcomes, but this is further enhanced when work-related flow is introduced.

Keywords: Challenge Job Demands, Work-Related Flow, Work-Life Balance

#### INTRODUCTION

Studies on challenge job demands have progressed, but sufficient evidence reveals that its effects on job and personal outcomes are dichotomized (Liu et al., 2022). For example, challenge job demands have been positively related to both job strains and positive work outcomes such as work engagement, job satisfaction, and job performance (e.g., Crawford et al., 2010; Liu et al., 2013). Although challenge job demands, described as attainable work demands that require time and effort from the employees (Cavanaugh et al., 2000) are identified as stressful to employees, they can also enhance a sense of achievement through work role fulfilment. Work role fulfilment facilitates organizational structure of the workplace, such as job characteristics and personal values which has been identified as a potential proponent of work—life balance for employees (*Dixon & Bruening, 2007;* Mazerolle & Goodman, 2013). Despite that research interest generated, which has

shown that challenge job demands yield inconsistent results, it is probable that challenge job demands can also be associated with work-life balance among music and fine and applied arts undergraduate students who are among the group identified to experience flow (Nakamura & Csikszentmihalyi, 2002).

During learning, students sometimes get to a state in which they are completely immersed in learning to the point that time, fatigue, investment of effort no longer matter, but the learning activity itself (Hui et al., 2025; Nakamura & Csikszentmihalyi, 2014). Seeing fine and applied arts students absorbed in their drawing in the hot sunshine, also listening to music students sing and play their guitar all day is a stark reality of the presence of flow state where learners are "performing a mentally effortful activity in which one is fully immersed produces positive feelings of energized focus and enjoyment in the activity" (Inzlicht et al., 2018, p. 340). However, an emerging stream of research suggests that experience of work-related flow defined as "a short-term peak experience characterized by absorption, work enjoyment, and intrinsic work motivation" (Bakker, 2008, p. 400) does not only depend on individual characteristics (e.g., Liu et al., 2022; Op den Kamp et al., 2018), but also on job characteristics, which refers to external job conditions such as job demands and resources (Bakker et al., 2023).

Previous qualitative and meta-analytic reviews of flow were restricted to selection of a few flow correlates, such as skill-challenge balance (e.g., Fong et al., 2015), predictors of flow (e.g., Nicol, 2017), measurement of flow at work (e.g., de Moura & Porto Bellini, 2019), and neurological mechanisms underlying flow (e.g., Van der Linden et al., 2021). Previous research has also reported some outcomes of work-related flow that include positive affect (e.g., Rogatko, 2009), life satisfaction (e.g., Bassi et al., 2014), risk-taking behavior (e.g., Liu et al., 2022), and job performance (e.g., Landhäußer & Keller, 2012). Peifer and Wolters (2021) qualitatively examined the antecedents and outcomes of flow, such study limits our understanding of constructs due to reliance on subjective interpretation of texts ans narratives (Mwita, 2022). More so, various antecedents and outcomes of flow that are specific for an organizational setting have been addressed in the literature including job resources (Fagerlind et al., 2013; Mäkikangas et al., 2010), energy and daily recovery (Demerouti et al., 2012). Despite modest attention paid to flow at work, to the best of our knowledge, research that focused on work-related flow as a buffer in the relationship between challenge job demands and work-life balance among undergraduate students of music and fine and applied arts who have been recognized to experience flow (Csikszentmihalyi, 2020) is none-existent. This may be the reason Liu et al. (2023) encouraged future flow researchers to explore more social and situational factors and different types of proactive behaviors that can influence flow. We respond to this call by attempting to examine work-related flow as a moderator of the relationship between challenge job demands and worklife balance.

Work-life balance is the condition in which an individual's resources match their job demands, creating equilibrium between the level of satisfaction and their personal life (Korkmaz & Erdogan, 2014; Ugwu et al., 2025). The concept of work-life balance has continued to receive attention in the literature because of the realization that personal and professional lives can either support or sabotage one another depending on how they are handled (Kumar & Janakiram, 2017). Work-life balance is entails sustaining the stability in both work and personal life, improves individual

wellbeing, lowers individual stress, and improves positive work behaviors. Regardless of the gains from work-life balance, hardly has any research focused attention to work-life balance of university undergraduate students even when students have been identified as vulnerable a group (Ndukaihe et al., 2023). Understanding the mechanism that facilitates the attainment of work-life balance is essential for the well-being and the success of students in their academic endeavor. This is because studies have demonstrated that work-life balance is essential due to its role in strategic development policies and interventions (e.g., Morris & Madsen, 2007). Work-life balance increases positive work behaviors and at the same time decreases individual stress (Liu et al., 2022). The goal of the current study is to explore the relationship between challenge job demands and work-life balance and whether work-related flow will moderate this relationship among undergraduate university students of music and fine and applied arts.

Our study advances previous research in different ways. First, although several prior studies sorted out how challenge job demands affect work outcomes (e.g., LePine et al. 2016; van Oortmerssen et al., 2020), the present research examines the moderating role work-related flow in the relationship between challenge job demands and work-life balance. This increases the small but thriving body of literature on challenge job demands and flow experience. Third, the correlates and outcomes of work-related flow has been previously examined (e.g., Fong et al., 2015), but rarely has research considered the moderating capabilities of work-related flow. Our study represents one of the first attempts to explore the adaptive features of flow experience in the academic context. Fourth, it is not known whether the JD-R theory has previously been implicated in undergraduate students mobilizing resources from flow experience. Our research, therefore, provide evidence of the boosting principle of JD-R theory in explaining the moderation influence of work-related flow on the relationship between challenge job demands and work-life balance in the school context.

To achieve these goals, we employed the Job Demands-Resources (JD-R) theory (Demerouti et al., 2001), to support our proposed model as the theory offers strong theoretical explanation of the moderating impact of work-related flow in relationship between challenge job demands and worklife balance. Since its introduction, the JD-R model has been a beacon of occupational health psychology, providing a robust framework to understand the interaction between job features, employee well-being, and organizational outcomes (Li et al., 2025). Job demands are those 'physical, social, or organizational characteristics of a job that require sustained physical or mental effort and are therefore associated with certain psychological and physiological costs' (Bakker et al., 2005, p. 170). According to JD-R theory, high job demands trigger health impairment process that can lead to depletion, exhaustion, and burnout (Bakker et al., 2023; Zito et al., 2019). On the other hand, resources (e.g., work-related flow), which refer to 'the beliefs people hold regarding how much control they have over their environment' (Bakker & Demerouti, 2017, p. 275) slowdown this process, generate well-being and improve job performance and can moderate the impact of demands on health and well-being, and thus protect individuals from harmful effects of challenge job demands and strain (Demerouti, 2023; Hobfoll et al., 2018; Zito et al., 2019). We argue that JD-R theory is suitable because when challenge job demands deplete individuals' resources; such individuals may recuperate due to work enjoyment component of work-related flow (Bakker, 2008; Inzlicht et al., 2018). Considering the need to find a balance in work activities, the JD-R model has been introduced to explain wellbeing dynamics in various professional

contexts, but its application to undergraduate students, especially of music and fine and applied arts is scarce. See our model in Figure 1 that gives the direction of our hypothesized conceptual framework, which we later tested.

#### Theoretical background and development of hypotheses

#### Challenge job demands and work-life balance

Understanding the complex relationship between challenge job demands and work-life balance is essential for university undergraduate students. Challenge job demands, which consist of factors like high workload, time pressure, and conflicting work schedules, can positively impact wellbeing (Tadic et al., 2015). Challenge job demands can contribute to financial security and valuable work experience, but they often come at the cost to job outcomes and well-being including job strains (Sheng et al., 2019) which can lead to exhaustion, stress, and burnout and in turn can obstruct an employee's family roles (Chen & Hou, 2021). Challenge demands pose potential threats to achieving desirable work outcomes (Podsakoff et al., 2007). These obstacles would increase negative emotions and make people more likely to withhold their job efforts (Lazarus, 1991) and thus do worse jobs. It has also been reported that challenge stressors were positively related to negative emotions such as anxiety (Rodell & Judge, 2009). Zhang et al. (2013) also found that challenge stressors were positively associated with psychological strains including anxiety and depression. Due to these challenges, finding strategies to balance demanding jobs with private life is crucial for university undergraduate students. Accordingly, we state that:

**Hypothesis 1:** Challenge job demands relate negatively to work-life balance.

#### Work-related flow and work-life balance

Flow state can only be attained when employee skills match challenging tasks (Nakamura & Csikszentmihalyi, 2012). Due to its adaptive nature, flow has positive effects on the variety and availability of resources over time, which enable employees to pursue more challenging goals (Hobfoll, 2002; Salanova et al., 2006). It is indicated that flow is associated with a wide variety of positive outcomes relevant to both individuals and organizations (e.g., Demerouti et al., 2012; Norsworthy et al., 2021), and therefore widely creating flow-facilitating contexts appears important. Clarke and Haworth (2011) found a positive relationship between levels of flow and students' perceptions of work-life balance. Students who experience flow in academic activities have better well-being and have better academic achievement, and have low burnout (Lim & Tan, 2024; Rijavec et al., 2017). Studies have indicated that the individuals who experience flow more often have better relaxation and are more ready to participate in activities (Clarke & Haworth, 1994), have higher self-esteem and life satisfaction, lower anxiety and better adaptive skills (Asakawa, 2010), are cheerful and more enthusiastic (Bryce & Haworth, 2002), experience more positive emotions and are more resilient (Schmidt, 2003), enjoy after-work energy (Demerouti et al. 2012), and well-being (Rivkin et al. 2018). We state that:

**Hypothesis 2:** Work-related flow relates positively to work-life balance.

#### Work-related flow as a moderator

van Oortmerssen et al. (2020) announced that "flow is a magic word. Flow is good, and flow is fun—everyone likes to be in the flow" (p. 2259). Flow entails optimal performance (e.g., Aubé et al. 2014; Demerouti 2006). Flow is adjudged the best state that contributes to an individual wellbeing and performance. Flow is a state of awareness in which one is completely immersed in the task at hand, and time flies (Bakker, 2008). Since the introduction of the concept of flow by Csikszentmihalvi in the 1970s, innumerable scholars have examined flow dynamics in a wide variety of contexts. These include leisure, education, elite sports, music, gaming and more (see Engeser & Schiepe-Tiska, 2012, for an overview). Flow theory has been fine-tuned over the years, and this refinement has continued. More recently, flow has also been examined in the organizational context (e.g., Feng et al., 2024; van Oortmerssen et al., 2020). However, in the organizational context, studies have shown that individuals in a flow state are better able to focus on their current tasks (Nakamura & Csikszentmihalyi, 2012; Šimleša et al., 2018). Work-related flow is associated with a wide range of positive outcomes for both individuals and organizations. For example, individuals high in work-related flow experience positive affect, work engagement, general wellbeing, job and life satisfaction, commitment, and performance (e.g., Bakker et al., 2018; Liu et al., 2023). Flow at work, being a highly enjoyable and optimal functioning state protects individuals from emotional exhaustion (Zito et al., 2022), cynicism, and inefficacy and has been found positively related to performance (Demerouti, 2006; Lavigne et al., 2012). Flow experience enhance the vigour and reduce the fatigue not only at work, but also at home (Demerouti et al., 2012). Based on the argument above, we speculate that:

**Hypothesis 3:** Work-related flow moderates the relationship between challenge job demand and work-life balance.

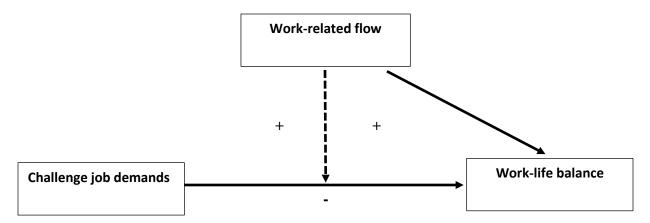


Figure 1. Conceptual model

#### **METHOD**

#### Participants and Procedure

The respondents were randomly selected from the Department of Music, fine and Applied Art at a Federal University in the Southeastern region of Nigeria. They comprised both males (54) and females (44) but of different age groups, and the study used 98 respondents who are within the age bracket of 18-30 years, with a mean age of 22.08 (SD=2.87). participation was voluntary, and the participants were assured that they were free to discontinue participation at any time without any consequences. Promised anonymity of their responses was promised and adhered to. For each of the participants who agreed to participate in the study, the surveys were administered to them. The researchers, in administering the questionnaires, explained the questionnaire instructions and what is required of the participants to do in order to respond to the questionnaires. This was done in order to ensure that the participants did not encounter any difficulty responding to the questionnaire while also ensuring they responded appropriately to the questionnaire. A total of 101 copies of the questionnaire were administered to the participants through the convenience sampling technique. Out of this number, 3 copies were lost, leaving the researchers with 98 copies, which were examined and certified to be good enough for data analysis. The administration and collection of the questionnaire lasted for approximately 2 weeks.

#### **Instruments**

Challenge demands were measured with the challenge demand scale, which consists of 4 items, developed by Searle and Auton (2015). The participants were asked to think about the tasks they are currently performing and assess how these tasks are likely to affect them. Sample items include: "They help me to learn a lot" and "They will show me I can do something new". The items were rated on a 5-point Likert scale response format that ranged from "strongly disagree = 1" to "strongly agree = 5". Olanrewaju, et al. (2013) established Cronbach's alpha = 0.95. Higher scores of the scale indicate higher challenge job demands.

Work-related flow was assessed with the Flow short scale (FSS; Rheinberg et al., 2002), which consists of 13 items. Items 1-10 assess components of the flow experience, and it is subdivided into two subscales: fluency (items: 2,4,5,7,8,9) and absorption (items: 1,3,6,10). Items 11-13 measure the worry component. These 13 items were responded to on a 7-point Likert scale that ranged from 1 = strongly disagree to 7 = strongly agree. Sample items include: "I feel just the right amount of challenge" and "I don't notice time passing". The scale has been adapted for the Nigerian sample, where Aransi (2022) provided a Cronbach's alpha of 0.79. Higher scores on the scale indicate higher work-related flow experience.

Work-life Balance was measured with the work-life balance scale, a self-report scale that consists of 4 items; it was developed by Brough et al. (2014) and it is rated on a 5-point Likert-type response scale (1=strongly disagree to 5=strongly agree). Respondents were asked to respond to 4 items by reflecting on their work and non-work activities over the past few months. A sample item is: "I currently have a good balance between the time I spend at work and the time I have available for

non-work activities". Higher scores on the scale indicate high WLB. Ugwu et al. (2023) established a Cronbach's alpha of 0.87 for Nigerian samples.

#### RESULTS

**Table 1: Descriptive statistics and correlations matrix** 

	M	SD	1	2	3	4	5
Gender	.46	.50					
Age	22.08	2.87	00				
Challenging job demands (CJD)	16.02	2.48	08	30**			
Work-related flow (WRF)	43.91	5.36	$.17^{*}$	21**			
Work-life balance (WLB)	14.59	3.14	.12	13	.26**	.23**	

Note: \*p < .05, \*\*p < .001; Gender ('0'-Male, '1'- Female), CJD- Challenging Job Demand; WRF-Work-related; WLB- Work-Life Balance.

The correlations among the variables are presented in Table 1. Gender was not significantly correlated with age (r = -.001, p > .05), challenge job demands (CJD; r = -.08, p > .05), or worklife balance (WLB; r = .12, p > .05). However, it was significantly correlated with work-related flow (WRF; r = .17, p < .05), suggesting that females reported higher levels of work-related flow compared to males. Age was negatively correlated with CJD (r = -.30, p < .001), WRF (r = -.21, p < .001), and WLB (r = -.13, p > .05), indicating that younger employees reported higher levels of job demand, work-related flow, and work-life balance. CJD was positively correlated with WRF (r = .24, p < .001) and WLB (r = .26, p < .001), while WRF was also positively correlated with WLB (r = .23, p < .001). These correlations highlight the relationships among the participants between work-related flow, job demands, and work-life balance.

**Table 2: Regression coefficients** 

Predictor	В	SE	T	р	LLCI	ULCI
Gender	.64	.42	1.52	.13	19	1.47
Age	01	.08	07	.94	16	.15
Challenging job demands (CJD)	.28	.09	3.19	.00	.11	.46
Work-related flow (WRF)	.09	.04	2.13	.03	.01	.17
Interaction effect (Int)	03	.02	-2.01	.05	07	.00

Note: p < .05, \*p < .001; Gender (coded 0 = male, 1 = female), CJD = Challenging Job Demand, WRF = Work-related Flow, Int = Interaction effect.

The results of the regression analysis are presented in Table 2. Gender did not significantly predict the outcome (B = .64, SE = .42, t = 1.52, p = .13), indicating no significant difference between males and females in the outcome variable. Age was also not a significant predictor (B = -.01, SE = .08, t = -.07, p = .94). Challenge job demands (CJD) was a significant positive predictor of the outcome (B = .28, SE = .09, t = 3.19, p = .00), suggesting that higher levels of CJD was associated with an increase in the outcome variable. Similarly, work-related flow (WRF) was a significant positive predictor (B = .09, SE = .04, t = 2.13, p = .03), indicating that higher levels of work-related

flow were linked to an increase in the outcome. The interaction effect (Int) was a significant negative predictor (B = -.03, SE = .02, t = -2.01, p = .05), suggesting that the interaction between the predictors had a negative impact on the outcome.

Table 3: Conditional effects of challenge job demand at different levels of work-related flow

WRF Level	Effect	SE	T	P	LLCI	ULCI
Low	.46	.13	3.69	.00	.22	.71
Mean	.28	.09	3.19	.00	.11	.46
High	.11	.13	.84	.40	14	.35

Note: p < .05, \*p < .001; WRF = Work-related Flow, CJD = Challenging Job Demand, LLCI = Lower Limit Confidence Interval, ULCI = Upper Limit Confidence Interval.

The results of the simple slope analysis for the conditional effects of challenging job demand (CJD) at different levels of work-related flow (WRF) are presented in Table 3 and Figure 2. At low levels of WRF, CJD had a significant positive effect on the outcome (Effect = .46, SE = .13, t = 3.69, p = .00, 95% CI [.22, .71]). At the mean level of WRF, CJD continued to have a significant positive effect (Effect = .28, SE = .09, t = 3.19, p = .00, 95% CI [.11, .46]). However, at high levels of WRF, the effect of CJD on the outcome was not significant (Effect = .11, SE = .13, t = .84, p = .40, 95% CI [-.14, .35]).

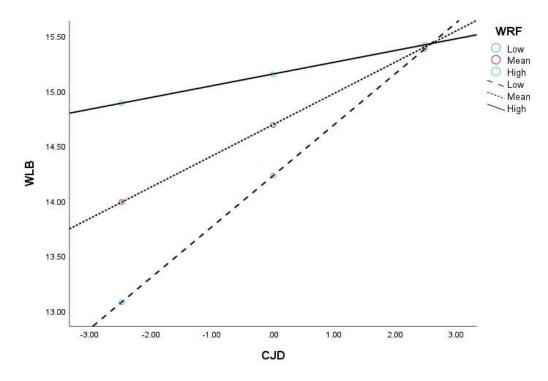


Figure 2. Interaction graph of challenge job demand and work-related flow and work-life balance

#### **DISCUSSION**

This study examined work-related flow as a moderator of the relationship between challenge job demands and work-life balance among music and fine, applied art undergraduate students. Contrary to our hypothesis 1, challenge job demands related positively to work-life balance. This suggests that students with higher challenge job demands reported better work-life balance. This finding suggests that because challenge demands are absorbing, individuals are more likely to invest more resources (e.g., time and energy) in their work roles, which can also promote worklife balance. This finding is in line with the JD-R model (Demerouti et al., 2001), which highlights that challenge job demands can be viewed as those demands that, though potentially stressful, provide the opportunity for personal development and growth. Although challenge job demands involve energy expenditure and can siphon individual energy resources, challenge demands can spark positive emotions and cognition and increase work engagement and performance. Challenge job demands can facilitate goals that promote motivation and not only the energetic processes (Crawford et al., 2010). The finding also agrees with earlier studies (e.g., LePine, 2022; O'Brien & Beehr, 2019) that challenge demands have positive motivational outcomes across different studies and samples. This finding is intriguing in that challenge demands positively relates to burnout, and to work outcomes such as work engagement, job satisfaction, and job performance (e.g., Crawford et al., 2010; Liu et al., 2013).

The second hypothesis which stated that work-related flow relates positively to work-life balance was also confirmed. This finding indicated that work-related flow is positively associated with work-life balance, suggesting that a higher level of flow was linked to better work-life balance. This finding follows the resources dimension of the JD-R model. Work-related flow which its main feature is work enjoyment understandably enhanced work-life balance. Work-related flow has also been found to associate with a wide range of positive outcomes to both employees and organizations including positive affect, work engagement, general wellbeing, job and life satisfaction, commitment, and performance (e.g., Liu et al., 2023). Flow at work has also been found to alleviate exhaustion (Zito et al., 2022). This finding suggests that students who reported higher levels of flow during their academic tasks also expressed a stronger sense of balance between their academic responsibilities and personal live.

Our hypothesis 3, which states that work-related flow moderates the relationship between challenge job demands and work-life balance, was significant. Specifically, work-related flow significantly moderated the relationship between challenge job demands and work-life balance. At lower levels of work-related flow, challenge job demands had a stronger positive effect on work-life balance, but this effect diminished at higher levels of flow. When individuals are in a state of flow, they are less likely to perceive challenges as threats; instead, they view them as opportunities for growth and mastery. When individuals perceive their skills to be adequate and match job demands, they are more likely to experience flow (Csikszentmihalyi, 1990; Guo et al., 2020). This finding agrees with previous research where De Fraga and Moneta (2016) indicated that flow moderated the positive association between perceived managerial autonomy support and work engagement, and also the positive associations between autonomy support and satisfaction of intrinsic psychological needs. This finding corroborates earlier studies where individuals high in work-related flow experience positive affect, work engagement, general well-being, job and life

satisfaction, commitment, and performance (Bakker et al., 2018; Liu et al., 2023). The finding also agrees with the assertion that flow at work, being a highly enjoyable and optimal functioning state protects individuals from emotional exhaustion (Zito et al., 2022).

#### Implications of the study

Work-related flow as a moderator of the relationship between challenge job demands and worklife balance among undergraduate university students was investigated and the study has both theoretical and practical implications. Theoretically, the study made a significant contribution to the literature by extending research on challenge job demands and work-related flow. This is particularly because research on work-related flow is relatively new, and its predictors, outcomes. and adaptive capabilities are mainly speculated but rarely empirically tested. We also extended the JD-R theory (Demerouti et al., 2001), showing its power to explain the moderating role of workrelated flow in the relationship between challenge job demands and work-life balance in the university context. On practical grounds, the findings of the study suggest that institutions should consider designing academic programs and experiential learning opportunities that not only challenge students but also facilitate the flow of experience in their work. When students are absorbed in their tasks, they can navigate the stress of challenge job demands more effectively, thereby enhancing their overall work-life balance. Universities should organise workshops and training sessions focused on improving work-related flow. This is because work-related flow can be improved when individuals use their strengths more frequently, create a balance between challenges and skills, set clear goals, reduce distractions, and foster a positive work environment that encourages employee empowerment and skill development (Liu et al., 2022). Faculty and academic advisors have a crucial role to play in recognising individual student needs and, if necessary, engaging in personalised mentoring sessions aimed at helping students identify their strengths and interests, which can facilitate the flow of experience. By facilitating an environment where students can thrive and experience flow, universities can enhance student satisfaction, retention, and overall mental health, thus ensuring that students maintain a healthy work-life balance.

#### Limitations of the study and suggestions for future research

Despite the contributions of the study to the literature, there are shortcomings worthy to be noted. First, our study was carried out using limited participants within the university environment in two federal universities in Southeast Nigeria. This study is limited by a small sample size, which could affect the generalizability of the findings. Future studies should use a larger sample size to increase the chances of the findings being generalized to a larger population. The data collected are self-reported, which often give room for social desirability bias. Future research should adopt multiple sources of data, such as from colleagues and instructors, to cushion any inflation of scores by respondents. Our study employed cross-sectional data, which is deficient in establishing causality. Future research should employ the longitudinal design that has the capacity to establish a cause-effect relationship.

#### **Conclusion**

This study investigated work-related flow as a moderator of the relationship between challenging job demands and work-life balance among fine and applied art & music undergraduate students. The researcher collected data from a sample of employees using standardised questionnaires and conducted statistical analyses to determine whether work-related flow moderates the relationship between challenging job demands and work-life balance. The results of the study indicated that the interaction between work-related flow and challenging job demands significantly moderated the relationship with work-life balance. Challenge job demands were found to be positively associated with work-life balance, suggesting that higher job challenging demands were linked to better work-life balance. On the other hand, challenge job demands positively related to work-related flow, indicating that higher job demands were associated with higher levels of work-related flow.

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