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Psychometric Validation of the Constant Connectivity Scale in the Context of Digital Work in Italian Organizations

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Abstract

In an increasingly digitalized work environment, the expectation of perpetual work availability—constant connectivity (CC)—has become central to employees' daily experiences, influencing productivity, well-being, and work–life balance. This study validates the Constant Connectivity Scale in the Italian organizational context, assessing its psychometric properties through exploratory and confirmatory factor analyses with 300 employees from three organizations. Reliability and validity assessments revealed the scale's unidimensional structure, strong internal consistency, and high construct validity, demonstrating its effectiveness in measuring perceived hyperconnectivity at work. Findings reveal important relationships between constant connectivity and employee outcomes: significant associations with increased anxiety and a paradoxical moderate positive correlation with job performance, suggesting complex mechanisms whereby connectivity simultaneously activates engagement and strain processes. The weak correlation with smart working perception indicates that organizational flexibility policies have not substantially reduced connectivity expectations in Italian organizations. This study contributes to the digital work literature by providing a validated, culturally adapted instrument for as sessing constant connectivity in the Italian workforce. The validated CCS offers organizations evidence-based measurement for understanding hyperconnectivity intensity and implementing targeted strategies for building workforce resilience and promoting mental health through better management of digital connectivity demands.

Keywords: constant connectivity; digital work; smart working; job performance; anxiety; psychometric validation

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1. Introduction

Digital work has undergone profound transformation in recent decades, particularly accelerated by the COVID-19 pandemic and technological advancement. Digital Connectivity is the ability of people, businesses, and nations to link and communicate through digital tools and infrastructures, including the internet, mobile networks, cloud computing, and smart devices. This technological development forms the basis for communication on the

global scale, allowing for the exchange of data as well as digitalization of many of the work and social processes (Alimova, 2023; Treem, 2013).

The importance of having this digital connectivity has grown exponentially over the last few years. The health crisis served to boost the spread of digital technologies in different areas, including work, education and everyday relations (Risi & Pronzato, 2021). The rush to remote work, virtual meetings, and online services has shown how critical having a reliable and easily accessible connection is for productivity and digital inclusiveness (Cimperman, 2023; Mazmanian, 2013). Both the positive and negative influences of digital connectivity in the workplace are significant. The number one benefit is increased flexibility. Working remotely enables individuals to do their work from a different location, contributing to a better work–life balance and eliminating or minimizing commuting distance and costs (Barley et al., 2011; Tramontano et al., 2021). Moreover, the implementation of digital solutions, including video conferencing, cloud systems, and collaborative software has streamlined teamworking, allowing organizations to make better use of time and resources (Chatterjee et al., 2023). Another significant advantage is the ability to work with international companies, as digitalization has eliminated many geographical barriers and people can easily work for companies based in different cities or even countries without having to move. Simultaneously, training and talent development has been broadened, with increasing online availability for courses adding new avenues of learning. Finally, reduced travel time and the digitization of documents and processes had also resulted in a positive impact on the environment via lesser traffic, lower pollution emission levels, minimal paper consumption (Dwivedi et al., 2022). However, along with digital transformation come some significant issues. constant connectivity will be the reason for stress and hyperconnection, which is why it will force you to increase the risk of burnout, and it will be difficult for you to create a clear demarcation between work and your life. When it comes to smart working, how to set boundaries has become a burning issue for employees that continue to be signed-in, generating anxiety and low overall work performance. Research suggests that excessive exposure to digital technology can interfere with mental health, with employees feeling greater pressure to be always on and always productive (Boswell et al., 2016; Vyas & Butakhieo, 2020). The cumulative result of prolonged screen exposure and excess of virtual interaction will lead to increase in digital fatigue resulting in lack of concentration and job satisfaction in the individual which will ultimately hamper the performance of organization (Boswell et al., 2016; Vyas & Butakhieo, 2020). Moreover, even in contexts where internet access is widely available, limited digital skills or suboptimal connection quality may reduce the effective use of digital tools. For individuals with lower technological proficiency, this functional digital gap may impede career advancement and limit employment prospects. Cybersecurity is another great challenge: working online exposes companies and employees to the risk of cyberattacks and privacy breaches, making it essential to invest in data protection and cybersecurity strategies (Derks et al., 2016; Thwaites, 2021). On the other hand, overdependence on communication technology might impair the quality of human relationships and problem-solving in the absence of digital devices. In addition, technical failures or network breakdowns can interrupt entire workflows, a significant issue given the need for reliable infrastructures (Amankwah-Amoah et al., 2021). Overall, the benefits of having the world at your fingertips have made it easier than ever to work virtually all over the globe. It is important to find a balance in the use of digital tools, to ensure that technology is used in a conscientious manner that benefits employees, while maintaining digital innovation to maximize its advantages. In organizational settings, managers should implement such initiatives because they help mitigate the psychological strain associated with constant connectivity and digital overload. Interventions like establishing clear temporal boundaries, encouraging

digital detox practices, or promoting healthy remote-work norms are essential to reducing work-related anxiety, preventing burnout, and maintaining employee well-being and performance. (Machado Silva, 2025; Vanden Abeele & Nguyen, 2022).

1.1. Job Demands–Resources Model and the Constant Connectivity

Within this rapidly evolving digital landscape, the Job Demands–Resources (JD-R) model (Bakker & Demerouti, 2007, 2017; Demerouti et al., 2001) provides a useful theoretical framework to understand how constant connectivity affects employees' well-being and performance. According to the JD-R model, job demands such as cognitive overload, continuous availability, accelerated communication flows, and blurred boundaries between work and private life require sustained effort and may lead to strain, exhaustion, and burnout when not counterbalanced by adequate resources. Constant connectivity—the perpetual expectation of work availability through digital devices—operates as a contemporary job demand with specific characteristics. It requires sustained cognitive vigilance (monitoring for work communications), psychological presence even during non-work time (expectation to respond quickly), and emotional labor (managing the tension between personal and professional identities). Unlike traditional job demands (workload, time pressure) that are bounded by work hours, constant connectivity extends demand structures into personal time, creating what scholars call "temporal blurring" (Derks et al., 2016). This unique characteristic makes constant connectivity particularly relevant for understanding modern work stress.

At the same time, digital work also introduces important job resources, including flexibility, autonomy, access to information, and collaborative technological tools that can enhance motivation, engagement, and productivity. Smart working arrangements—flexible location and scheduling—theoretically function as a job resource by providing autonomy and control. According to JD-R predictions, such resources should buffer against constant connectivity demands by allowing employees to create temporal and spatial boundaries

The model posits that well-being depends on the dynamic balance between these demands and resources: when resources are insufficient, constant connectivity becomes a risk factor that activates the health-impairment process; when resources are present and effectively supported by organizational policies, digital connectivity can instead contribute to positive outcomes. Integrating the JD-R perspective into the analysis of constant connectivity allows a more comprehensive understanding of how digital transformation can either support or hinder employees, depending on the organizational capacity to manage demands, strengthen resources, and establish clear norms for digital boundary-setting (Demerouti et al., 2001; Kain & Jex, 2010).

1.2. Constant Connectivity: Conceptualization, Antecedents, and Consequences

Constant Connectivity (CC), the ability to be perpetually connected to digital devices, allowing continuous access to work-related information and communication This trend has been spurred by technological advancements, a greater reliance on digital tools like mobile phones and collaborative platforms, and changing workplace behaviors that demand constant availability. Now, with the transition to remote and hybrid work models, this trend has been exacerbated as it has become less clear where the boundaries lie between work life and personal life (Barker, 1993; Büchler et al., 2020).

The impact of constant connectivity is twofold. From one viewpoint, it increases stripping, empowering joint effort in real time, and builds data access. But it also creates enormous challenges. constant connectivity is closely tied to performance, as ongoing connectivity can cause cognitive overload, loss of focus, and task-switching, resulting in decreased productivity (Büchler et al., 2020). Appropriate use of digital resources may

facilitate immediate access and thus seamless workflow, but going overboard can break deep work, and inefficiency (Fenner & Renn, 2010).

In the organizational psychology literature, constant connectivity intersects with three complementary theoretical concepts that strengthen our understanding of its mechanisms. First, technostress—defined as "stress caused by one's inability to cope with ICT use" (Tarafdar et al., 2015)—captures how digital demands overwhelm individual coping resources. Recent Italian research (Ingusci et al., 2023) documents that excessive digital activity and work-intensification through technology significantly predict anxiety and burnout specifically among Italian workers, suggesting cultural and organizational specificity in how connectivity demands manifest. Second, digital overload (Mazmanian, 2013) describes the cognitive costs of managing perpetual information flows and communication demands, distinguishing between connectivity as enabling resource versus connectivity as exhausting demand. Third, emerging international policies on the right to disconnect (Edwards & Ramirez, 2016) recognize constant connectivity as a regulatory concern, yet implementation remains highly variable across organizational contexts, particularly in Mediterranean work cultures. This study positions constant connectivity at the intersection of these three literatures, providing organizations with a validated measurement tool to assess the specific intensity of hyperconnectivity in their workforce.

Because psychologically, constant connectivity and anxiety come hand in hand. This expectation of always-on availability puts stress on employees who find it difficult to mentally check out from work. This continual engagement can lead to burnout, sleep issues and emotional tiredness, all of which have adverse effects on general wellness (Taris & Schaufeli, 2015). Constant exposure to screens and notifications that come with a digital life, lead to digital fatigue which increases stress and decreases satisfaction with the job (Büchler et al., 2020).

Within constant connectivity and smart working, arrangements of remote and hybrid working have simplified and enhanced the possibility of employees being always online. While this flexibility provides benefits in the form of less commuting and work–life balance, it can also result in an erosion of the boundary between work and home time (Choung et al., 2023; Deng et al., 2023; Kreiner, 2006; Ren et al., 2023). The difficulty for many employees to "switch off" results in an "always-on" culture and adds to the pressure, which ultimately threatens long-term productivity. Organizations need to look at ways to minimize these impacts, such as defining clear digital boundaries, rolling out disconnection policies, and getting employees to take regular time out.

To sum up, Constant Connectivity has altered the landscape of 21st-century work by enhancing productivity and accessibility; however, it also carries potential consequences such as increased stress and mental fatigue, reduced ability to detach from work, higher risk of burnout, and impaired work–life integration. Therefore, when implementing constant connectivity practices, organizations must carefully balance the potential benefits with these costs, ensuring that digital connectivity does not undermine employees' well-being and long-term performance. (Sonnentag & Bayer, 2005; Straus et al., 2023).

1.3. Constant Connectivity Scale (CCS)

The Constant Connectivity Scale (Büchler et al., 2020) measures constant connectivity—the psychological expectation of perpetual work availability—as distinct from: (1) digital connectivity (technical capacity to access work systems), and (2) hyperconnectivity (pathological extreme with maladaptive consequences). The CCS captures job demand intensity, not infrastructure or clinical severity. The goal is to understand how this continuous availability affects both work and personal life, particularly focusing on psychological

well-being, and highlighting potential negative effects such as stress and difficulties in separating work from personal life.

The scale's final version is based on five dimensions of constant connectivity (CC): need for reachability at any time (including non-working time), feeling of being stuck in working life at any time/place, the need to do work while not in the office, use of work devices at home and the habit of reading and responding to work communications outside of working hours. All five items are assessed on a five-point Likert scale from 'strongly disagree' to 'strongly agree' allowing for a straightforward and comparable measure of how connected employees feel. Confirmatory factor analysis of two independent samples from large-sized firms in the automotive and technology industries was performed to validate the scale. The results exhibited both high reliability and construct validity, evidenced by the factor loadings that ranged from 0.64 to 0.94, and composite reliability indices between 0.84 and 0.89 (Büchler et al., 2020).

The Constant Connectivity Scale not only serves as a valid measure of hyperconnectivity, but may be a reliable and viable tool to help organizations assess the impact of hyperconnectivity on employees' health and wellbeing. By utilizing this metric, organizations and academia can better understand the impact of digitalization on people and create tailored approaches to foster a healthier work–life balance. Measurement tools such as this are important to leverage in this process in an ever more digital world, driving sustainable and employee friendly work practices (Büchler et al., 2020).

1.4. Cultural and Contextual Specificity of Digital Work Demands in Italian Organizations

Although the constant connectivity scale has been extensively used and validated in Northern European and Anglo-American organizational contexts, substantial evidence suggests that the experience and manifestations of constant connectivity may differ systematically across national and cultural settings. Italy presents a distinct organizational context where cultural values, labor regulations, and organizational practices around digital work create specific conditions requiring localized measurement tools.

Mediterranean work cultures, including Italy, exhibit particular characteristics regarding work–life integration, family-centered values, and work-time regulation that differ markedly from Northern European or Anglo-American organizational norms. Italian society prioritizes family time and leisure, with work schedules often structured around family needs and cultural practices such as the traditional lunch break and afternoon rest period (Bottaro et al., 2025). This cultural framework creates a distinctive context where work–life separation differs from cultures emphasizing continuous work engagement.

Simultaneously, research on technostress in digital work contexts has documented that Italian employees face unique pressures related to work intensification through digital technologies (Cavicchioli et al., 2025). Recent evidence from Italian organizations revealed that excessive digital activities and off-hours work communications significantly increase work-related stress among Italian employees, particularly when spatial and temporal boundaries between work and home become blurred (Cavicchioli et al., 2025). These Italian-specific findings suggest that how Italian workers experience and conceptualize constant connectivity may differ from workers in other national contexts where the original constant connectivity scale was developed and validated.

The implementation of smart working (remote work) in Italian organizations has followed distinct regulatory and organizational patterns that differ from countries where the original scale was validated. Italy's smart working legislation—initially set out in Legislative Decree 81/2017 and substantially modified through emergency provisions during the COVID-19 pandemic—creates a unique organizational context. The transition from simplified emergency remote working procedures to the ordinary regime (effective

April 2024) requires individual agreements specifying working conditions, tools, hours, and boundary-setting practices.

Research examining smart working implementation in Italian companies revealed substantial variability in organizational support, policy clarity, and employee autonomy across firms (Ingusci et al., 2023). Some organizations implemented comprehensive disconnection protocols, while others adopted smart working primarily as a cost-reduction strategy (Ingusci et al., 2023). This heterogeneity in smart working practices suggests that Italian employees may experience constant connectivity pressures differently depending on their organization's specific policies and practices around boundary-setting and availability expectations. Therefore, how Italian workers experience and conceptualize the need for constant connectivity may differ systematically from workers in countries with more standardized or uniform remote work practices (Cavicchioli et al., 2025).

This scale will provide Italian researchers and practitioners a culturally adapted, psychometrically validated measurement tool grounded in the specific experiences and contexts of Italian employees (Ingusci et al., 2023). This validation enables Italian organizations seeking to implement evidence-based interventions around digital connectivity and work–life balance to employ a locally validated instrument rather than relying on tools developed in different cultural and organizational contexts.

1.5. Aim

Constant connectivity scale (Büchler et al., 2020) addresses the increasingly relevant issue of always being connected at work. The omnipresence of smartphones, laptops and other electronic devices results in hyperconnectivity which leads to a ground-shaking paradigm in the control of work and life balance. Nevertheless, measuring this phenomenon in an Italian context still remains a challenge where the local adaptation of an appropriate tool is still lacking, therefore making possible to analyze the effects of this phenomenon on well-being employees and organizations dynamics (Büchler et al., 2020). While the constant connectivity scale (CCS) has demonstrated strong psychometric properties in Anglo-American and Central European contexts (specifically in German-speaking automotive and technology firms), considerable evidence suggests that the experience and manifestations of hyperconnectivity may differ across national and cultural contexts.

In order to fill this gap, we translated and validated the scale using a sample of Italian employees. We aim to tailor the instrument on the national cultural and professional setting, to adapt the tool to measure accurately the perceived hyperconnectivity degree among Italian workers. The validation will be performed using rigorous statistic tests (i.e., factor analysis) to stress the reliability and validity of the instrument in its Italian version.

2. Materials and Methods

2.1. Participants and Description of Sample

The study population comprised 300 full-time employees from Italian organizations within the same industrial sector. Inclusion criteria were: (a) permanent or fixed-term employment status, (b) regular use of digital devices for work communications, and (c) willingness to complete survey questionnaires. No exclusion criteria were applied. Age distribution included: 20–30 years (11.3%), 31–40 years (25.7%), 41–50 years (40%), and 50+ years (23%). In relation to gender: 208 male (69.3%), 91 female (30.4%), 1 undeclared (0.3%). Regarding organizational roles: 8 executives (2.7%), 14 managers (4.7%), 278 employees (92.7%).

A convenience sampling approach was employed to recruit participants from three organizations in the same industrial branch. The final sample comprised 300 employees and no missing data was present across any scale items or primary measures used in subsequent

analyses. The online questionnaire platform required completion of all scale items before submission, ensuring data completeness. This sample size provided adequate statistical power for exploratory and confirmatory factor analyses. Convenience sampling reflects practical organizational access constraints but limits generalizability beyond similar-sized firms in comparable sectors.

2.2. Ethical Considerations

Informed consent was obtained from all participants and the process was strictly in accordance with ethical principles described in the Declaration of Helsinki.

2.3. Procedure

Survey Preparation

Data were collected in 2023 through an online questionnaire administered via company intranet. Employees received email invitations with direct survey links. Average completion time was 10–15 min. Responses were anonymous and voluntary. Informed consent was obtained from all participants through the online survey platform prior to questionnaire completion.

2.4. Questionnaire

The survey included several questionnaires assessing the most important dimensions of digital connection and correlated factors.

1. CCS (Constant connectivity scale; Büchler et al., 2020). It consists of statements that assess employees' perception of the need to remain constantly connected to work through mobile devices. It uses a 5-point Likert-type format, where respondents indicate their level of agreement with the statements. An example of a question in the questionnaire is: "I feel that I need to be constantly available for work." This scale provides valuable insights into how continuous connectivity affects employees' work–life balance. Alpha 0.93 was obtained in this study.
2. GHQ-12 (General Health Questionnaire, Anxiety Subscale; Fraccaroli et al., 1991). It was assessed anxiety, the potential psychological effects of hyperconnectivity with the GHQ-12 anxiety subscale Italian version. This instrument gauging mental well-being which contains questions like, "have you felt under strain during the past few years;} and "Have you recently lost a lot of sleep worrying?" Responses were coded for indicators of elevated anxiety levels in employees experiencing constant connectivity. Alpha 0.87 was obtained in this study.
3. Smart Working Questionnaire (Ingusci et al., 2023). This scale has items such as "I have greater control over my work schedule" and "Smart working allows me to better balance my professional and personal life. Alpha 0.67 was obtained in the current study.
4. Job Performance Scale (Bal & De Lange, 2015). This instrument is an indicator of work productivity, which assesses various dimensions of employee job productivity and effectiveness. The scale has been applied in the field of human resources management and work psychology to focus on issues such as aging and job performance. Questions are designed to evaluate individual performance based on personal and team contributions (e.g., How would you rate your work performance?), with responses rated on a 10-point Likert scale (1 = Very poor; 10 = Very high). Alpha 0.91 was obtained in the present study.

Instrument Adaptation and Translation Procedure

The constant connectivity scale was adapted into Italian following established guidelines for cross-cultural instrument translation (Beaton et al., 2000; Sousa & Rojjanasrirat, 2011). The adaptation process involved the following steps:

(1) Forward Translation: Two independent translators (native Italian speakers fluent in English) translated the original English-language Scale into Italian. Both translations were compared and synthesized into a single Italian version emphasizing semantic and conceptual equivalence.
(2) Expert Review: The synthesized Italian version was reviewed by three experts in occupational psychology to ensure conceptual relevance and cultural appropriateness within Italian organizational contexts.
(3) Back-Translation: Two independent bilingual translators (native English speakers fluent in Italian) back-translated the Italian version into English without access to the original instrument. This back-translated version was compared with the original English version to identify and resolve discrepancies in meaning and semantic equivalence.
(4) Pilot Testing: The finalized Italian version was then pilot-tested with a small sample (n = 10) of Italian employees to assess comprehensibility and clarity of item wording before full administration.

2.5. Analyses

The analyses were conducted with statistical software IBM SPSS Statistics 29.0 and AMOS 29.0 Graphics. Firstly, reliability analysis using Cronbach's alpha was conducted to determine the internal consistency of the five-item scale to measure digital connectivity. The items were also assessed using test's item correlation. Inter-item correlations were calculated as well. Secondly, an exploratory factor analysis (EFA) through principal axis factoring with oblique rotation was performed to identify the underlying dimensionality structure of the scale. Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett's test of sphericity were used to assess the suitability of the data for factor analysis. Thirdly, to examine the factorial validity of the scale, a confirmatory factor analysis (CFA) was conducted. Indices of model fit (comparative fit index [CFI], Tucker–Lewis index [TLI], root mean square error of approximation [RMSEA], and standardized root mean square residual [SRMR]) were tested to assess the fit of the proposed factor structure. Lastly, the convergent and discriminant validities were examined using Pearson correlations computed in SPSS.

3. Results

3.1. Reliability Analysis

The Cronbach's Alpha (α) coefficient was calculated to evaluate the internal consistency of the instrument in the Italian version. The five-item α = 0.930 indicated an excellent level of internal reliability. The five items of the constant connectivity Scale demonstrated high internal consistency, which means the items are well correlated and measuring the same construct.

3.2. Items Descriptive Statistics

Descriptive statistics (means and standard deviations) for each item were computed, showing mean values between 2.52 and 3.01, and standard deviations very close to 1.0, indicating good variability in responses (Table 1).

Table 1. Descriptive statistics of the items.

Item	Mean	Std. Deviation	N
CC1-Through my work mobile device, I am always available to my colleagues and/or clients, even during non-working hours	2.75	1.101	300
CC2-During non-working hours, I check my work through my work mobile device (e.g., checking emails or similar work-related messages, intranet, etc.)	2.70	1.040	300
CC3-Through my work mobile device, I know what to expect at work before I arrive	3.01	0.998	300
CC4-For me, it is common to check and respond to emails or other work-related messages during non-working hours	2.52	1.061	300
CC5-Through the use of my work mobile device, I remain connected to work during non-working hours	2.60	1.100	300

3.3. Correlation Between Items

The correlation matrix between items was calculated to analyze their interrelationships. As shown in Table 2, all correlations are positive and high (range: 0.606–0.847), indicating that the items consistently measure the same construct.

Table 2. Correlation matrix between items.

	CC1	CC2	CC3	CC4	CC5
CC1	1.000				
CC2	0.719	1.000			
CC3	0.606	0.671	1.000		
CC4	0.725	0.811	0.700	1.000	
CC5	0.737	0.782	0.663	0.847	1.000

In conclusion, the reliability analysis results support the internal consistency of the instrument in Italian, justifying its use in future studies to assess digital connectivity in work environments.

3.4. Exploratory Factor Analysis (EFA)

To assess the factorial structure of the instrument, an Exploratory Factor Analysis (EFA) was conducted using Maximum Likelihood extraction. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was 0.896, indicating that the data were suitable for factor analysis (Kaiser & Rice, 1974). Bartlett's test of sphericity was significant, $\chi^2(10) = 1223.283$, $p < 0.001$, suggesting that the correlation matrix was appropriate for factor analysis.

The analysis extracted a single factor with an eigenvalue greater than 1, explaining 78.25% of the total variance, which supports the unidimensionality of the scale. Given that only one factor had an eigenvalue above 1 and accounted for a significant portion of the variance, these findings support the assumption of unidimensionality for the scale. This result justifies proceeding with a CFA to further validate the factorial structure of the instrument.

3.5. Confirmatory Factor Analysis (CFA)

To evaluate the factorial structure of the instrument, a CFA was performed. As shown in Table 3, the results demonstrated a strong model fit, as indicated by several fit indices. Specifically, the chi-square value was low, and the RMSEA was well below

the recommended threshold of 0.05, suggesting an excellent fit. Moreover, comparative indices such as the CFI, TLI, and NFI were all above 0.90, reinforcing the validity of the one-factor model.

Table 3. Model fit indices.

χ^2	*p* Value	RMSEA	CFI	TLI	NFI	PRATIO	PCFI	PNFI	AIC
7.167	0.208	0.038	0.998	0.996	0.994	0.500	0.499	0.497	37.167

The Standardized Root Mean Square Residual (SRMR) was 0.032, well below the recommended threshold of 0.08, further confirming excellent model fit. Collectively, all fit indices (RMSEA = 0.038, CFI = 0.998, TLI = 0.996, SRMR = 0.032, and NFI = 0.994) substantially exceed recommended thresholds, providing strong evidence that the one-factor model adequately represents the data structure in the Italian version of the constant connectivity scale

The CFA results provide strong evidence supporting the factorial validity of the instrument. The high comparative fit indices, along with the low RMSEA and chi-square values, indicate that the one-factor model adequately represents the data structure in the Italian version of the instrument.

The structural model obtained from the CFA is represented in Figure 1. The model illustrates the standardized factor loadings for each item, showing strong loadings that support the unidimensional nature of the construct.

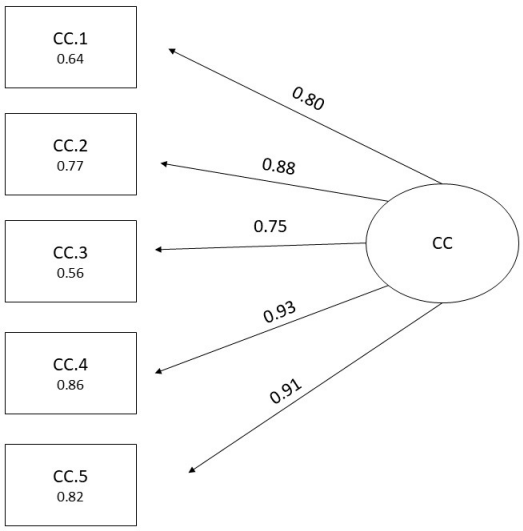


Figure 1. Confirmatory factor analysis model representation (*n* = 300).

The figure provides a visual representation of the latent construct (Digital Connectivity) and its relationship with the observed variables (items). The high factor loadings further confirm the robustness of the measurement model.

3.6. Additional Analysis

To assess convergent validity, the Average Variance Extracted (AVE) and Composite Reliability (CR) were calculated. The AVE value was 0.734, exceeding the recommended threshold of 0.50, confirming that the majority of the variance is explained by the latent construct. Additionally, the CR value was 0.932, surpassing the recommended 0.70, indicating strong internal consistency among the items. These results confirm the presence of convergent validity, demonstrating that all items are strongly related to the underlying

construct. Given that the scale is unidimensional, discriminant validity was not assessed, as there are no additional constructs to compare.

Furthermore, criterion validity was evaluated by analyzing the correlations between the five-item digital connectivity scale and three related constructs: work performance ($r = 0.389$, $p < 0.001$), smart working ($r = 0.197$, $p < 0.001$) and anxiety ($r = 0.161$, $p < 0.05$). These results suggest that the scale is moderately related to work performance, weakly related to smart working, and only slightly related to anxiety, supporting its external validity without being redundant with these constructs.

In this sense, the weak but significant positive correlation between constant connectivity and anxiety aligns with JD-R theory predictions: constant connectivity, as a job demand, activates the health-impairment process leading to psychological strain. However, the modest effect size suggests that constant connectivity is one among multiple factors contributing to workplace anxiety. On the other hand, the moderate positive correlation between constant connectivity and job warrants theoretical reflection. Rather than the negative relationship one might initially expect from demand-resource theory, this positive correlation suggests complex, potentially reciprocal relationships. Finally, the weak correlation between constant connectivity and smart working perception indicates these are distinct constructs. Smart working represents organizational resources and flexibility arrangements, while constant connectivity captures the psychological demand to remain perpetually available. Smart working arrangements, despite their theoretical potential to provide autonomy, have not substantially reduced constant connectivity expectations in Italian organizations—a finding with important implications for policy effectiveness.

Since this study validates a unidimensional scale, discriminant validity was not assessed, as there were no additional constructs to compare. The results provide strong evidence for the construct validity of the instrument.

4. Discussion

This study makes two important contributions to the organizational psychology literature. First, we successfully validate the constant connectivity scale in an Italian organizational context, establishing it as a reliable and valid instrument for measuring perceived hyperconnectivity in digital work environments. The excellent internal consistency (Cronbach's $\alpha = 0.930$), strong unidimensional structure (78.25% variance explained), and favorable confirmatory fit indices (RMSEA = 0.038, CFI = 0.998) demonstrate the psychometric robustness of the Italian version

Second, and more significantly for theoretical advancement, this study positions constant connectivity within established organizational psychology theory specifically, the Job Demands–Resources (JD-R) model (Bakker & Demerouti, 2007, 2017; Demerouti et al., 2001). By conceptualizing constant connectivity as a contemporary job demand that activates the health-impairment process, we articulate why measuring this construct matters theoretically. Constant connectivity is not simply a descriptive feature of modern work; it is a measurable demand that depletes psychological resources, impairs recovery, violates work–life boundaries, and ultimately affects employee well-being and performance.

As expected, the scale exhibited significant correlations with construct measures relevant to work stress and work–life boundary management. These findings resonate with prior research on how the means of existence referencing the tools and technologies supporting work can produce a condition of perpetual, if not always controllable, accessibility (Diaz et al., 2012).

4.1. Theoretical and Practical Implications

The digital transformation of work, accelerated by the COVID-19 pandemic and ongoing technological change, has created new workplace demands that traditional organizational psychology theory had not fully addressed. By validating and theoretically positioning a measure of constant connectivity, this study contributes to the emerging literature on digital work stressors. Unlike traditional job demands (workload, role conflict, interpersonal demands), digital demands like constant connectivity operate across temporal and spatial boundaries, making them particularly difficult for employees to manage and for organizations to regulate.

This validated instrument enables future research to: (1) examine how constant connectivity interacts with other job demands and resources in affecting well-being, (2) identify individual and organizational factors that moderate the impact of constant connectivity, (3) develop and test interventions designed to reduce the strain associated with hyperconnectivity, and (4) contribute to the development of more nuanced theories of work–life integration in digital work contexts. Furthermore, the correlational findings provide nuanced evidence for JD-R theory applied to digital work. The significant relationship between constant connectivity and anxiety supports the health-impairment process: job demands (constant connectivity) lead to strain outcomes (anxiety). However, the complexity of the constant connectivity–job performance relationship reveals important theoretical limitations of simple linear models.

On the other hand, for practical purposes, this validated scale provides a measurement tool for assessing the extent to which employees experience constant connectivity pressures. Organizations can utilize this instrument to: (1) identify high-connectivity work groups or roles, (2) evaluate the effects of digital policies and practices, (3) monitor the effectiveness of interventions designed to establish healthy digital boundaries, and (4) make evidence-based decisions about remote work, smart working policies, and digital communication norms.

Moreover, although the constant connectivity scale has been validated in international samples, no Italian adaptation existed at the time of this research. This created a significant gap: Italian organizational psychology researchers lacked a validated instrument to measure this increasingly important construct in their national context. Organizations seeking to implement evidence-based interventions around digital connectivity and work–life balance lacked localized measurement tools.

Perhaps the most theoretically significant finding in this study emerges from the moderate positive correlation between constant connectivity and job performance ($r = 0.389$, $p < 0.001$). This relationship contradicts straightforward JD-R predictions. The paradox likely reflects competing mechanisms: constant connectivity activates engagement pathways (responsibility, identification) that enhance performance, while simultaneously activating strain pathways (detachment loss, overload) that impair it. In cross-sectional data, engagement benefits may outweigh strain costs, but this balance could reverse with accumulated exhaustion over time. Additionally, the relationship likely depends on unmeasured moderators: employees with perceived control over response timing and organizational support for disconnection may sustain higher performance despite high connectivity, while those without these resources experience greater strain.

Implications for Building a Resilient Workforce

This study contributes to building a resilient workforce by providing organizations with a validated tool to address constant connectivity as a threat to resilience. Resilience requires psychological detachment and cognitive recovery—capacities that constant connectivity depletes by extending work demands 24/7. Our finding that smart working (organizational resource) shows weak correlation with constant connectivity reveals that

policy alone is insufficient for protecting employee health. Organizations must implement complementary strategies: (1) explicit temporal boundaries protecting evening/weekend periods, (2) psychological detachment support through training and cultural norms normalizing offline time, (3) communication culture change promoting asynchronous practices, and (4) regular CCS monitoring to track intervention effectiveness. The validated CCS enables organizations to measure connectivity intensity and identify high-risk groups requiring targeted support. This measurement foundation is essential for implementing evidence-based interventions that promote mental and physical health through better management of digital demands. In the Italian context, Mediterranean cultures prioritize family time and work–life separation—values compatible with health-promoting disconnection. The validated CCS enables Italian organizations to operationalize these cultural values through measurement, ensuring that smart working policies and legal disconnection protections translate into actual employee health protection and organizational resilience.

4.2. Limitations and Future Research

This study, however, is limited. First, the cross-sectional nature of the study does not allow the assessment of temporal stability of the scale; future studies should also include follow-up assessments to investigate consistency of measurement. Second, the sample was specific to an organizational branch, thus making it difficult to extrapolate the findings to varying workplace contexts. Further research might even enable us to confirm this process in different industrial sectors or types of contracts for greater representativeness. Additionally, we recommend that future research examine whether constant connectivity experiences and scale functioning differ systematically across industries or organization types.

Another limitation of this validation study is the absence of measurement invariance testing. While we validated the Constant Connectivity Scale in the overall Italian sample, we did not test whether the scale functions equivalently across meaningful subgroups such as gender (male vs. female) or smart-working status (regular users vs. non-users). We recommend that future research prioritize multi-group confirmatory factor analysis examining configural, metric, and scalar invariance between smart-working users and non-users, and across age groups and organizational roles. These analyses would establish whether the scale functions equivalently across diverse workforce segments and strengthen confidence in group-level comparisons on constant connectivity.

A key methodological consideration is that the constant connectivity scale and other questionnaires employed in this study used Likert-type scales, which technically produce ordinal data. Following common practice in organizational psychology and social sciences research, these ordinal variables were treated as continuous in the structural analyses (e.g., correlations, CFA). While this approach is widely accepted in the field and does not substantially bias our results when the number of categories is five or more, we acknowledge this assumption and recommend that future studies employ robust methods (e.g., Weighted Least Squares or Diagonally Weighted Least Squares estimation) to test whether findings remain consistent when explicitly accounting for the ordinal nature of the data.

Future research should build on this foundation by: (1) conducting structural equation modeling to test hypothesized mechanisms through which constant connectivity affects outcomes (e.g., mediation through anxiety, moderation by organizational support), (2) examining boundary conditions such as industry, job type, and organizational culture, (3) investigating potential individual differences (personality, values, age, gender) that moderate responses to constant connectivity, (4) validating the Italian constant connectivity scale across multiple industries and organizational contexts to strengthen generalizability

and identify potential boundary conditions where constant connectivity manifests differently, and (5) developing and testing organizational interventions designed to mitigate the negative effects of hyperconnectivity while preserving legitimate workplace flexibility.

The ultimate goal should be a more comprehensive understanding of how digital technologies can be harnessed to enhance workplace productivity and flexibility without undermining employee well-being and work–life integration—a critical challenge for organizations in the 21st century. This research agenda directly supports the special issue mission of building resilient workforces that can thrive in increasingly digital work environments.

5. Conclusions

This study validates the constant connectivity scale as a reliable and theoretically meaningful instrument for measuring perceived hyperconnectivity in Italian organizations. More importantly, it advances organizational psychology theory by positioning constant connectivity within the Job Demands–Resources framework, conceptualizing it as a distinctive modern job demand that affects employee well-being and performance through the health-impairment process.

The digital transformation of work continues to accelerate, creating demands and challenges that existing organizational psychology theories were not designed to address. By validating a measure of constant connectivity and grounding it in established theory, this research provides both a measurement tool and a theoretical foundation for understanding and addressing the psychological impacts of perpetual work connectivity.

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