

Article

Not peer-reviewed version

---

# Validation of the Italian Multidimensional Psychological Flexibility Inventory Short Form (MPFI-24)

---

[Giulia Landi](#)<sup>\*</sup>, [Zhangxuan Bao](#), [Francesco Bruno](#)<sup>\*</sup>, [Kenneth I. Pakenham](#), [Francesca Chiesi](#), [Eliana Tossani](#)<sup>†</sup>, [Silvana Grandi](#)<sup>†</sup>

Posted Date: 13 February 2026

doi: 10.20944/preprints202602.1068.v1

Keywords: MPFI-24; scale validation; psychological flexibility; psychological inflexibility; psychometric properties



Preprints.org is a free multidisciplinary platform providing preprint service that is dedicated to making early versions of research outputs permanently available and citable. Preprints posted at Preprints.org appear in Web of Science, Crossref, Google Scholar, Scilit, Europe PMC.

Copyright: This open access article is published under a [Creative Commons CC BY 4.0 license](#), which permit the free download, distribution, and reuse, provided that the author and preprint are cited in any reuse.

Disclaimer/Publisher's Note: The statements, opinions, and data contained in all publications are solely those of the individual author(s) and contributor(s) and not of MDPI and/or the editor(s). MDPI and/or the editor(s) disclaim responsibility for any injury to people or property resulting from any ideas, methods, instructions, or products referred to in the content.

Article

# Validation of the Italian Multidimensional Psychological Flexibility Inventory Short Form (MPFI-24)

Giulia Landi <sup>1,2,\*</sup>, Zhangxuan Bao <sup>1,2</sup>, Francesco Bruno <sup>3,\*</sup>, Kenneth I. Pakenham <sup>4</sup>,  
Francesca Chiesi <sup>5</sup>, Eliana Tossani <sup>1,2,†</sup> and Silvana Grandi <sup>1,2,†</sup>

- <sup>1</sup> Department of Psychology, University of Bologna, Bologna, Italy
- <sup>2</sup> Laboratory of Psychosomatics and Clinimetrics (Head Prof. Silvana Grandi), Department of Psychology, University of Bologna, Cesena, Italy
- <sup>3</sup> Department of Human and Social Sciences, Universitas Mercatorum, Piazza Mattei 10, 00186, Rome, Italy
- <sup>4</sup> School of Psychology, The University of Queensland, Brisbane QLD, Australia
- <sup>5</sup> Department of Neuroscience, Psychology, Drug, and Child's Health (NEUROFARBA), Section of Psychology, University of Florence, Florence, Italy
- \* Correspondence: giulia.landi7@unibo.it (G.L.); francesco.bruno@unimercatorum.it (F.B.)
- † These authors contributed equally to this work.

## Abstract

This research examines the psychometric properties of the Italian Multidimensional Psychological Flexibility Inventory short form (MPFI-24), a measure of psychological flexibility/inflexibility. Study 1 investigated its factor structure, reliability and invariance (across gender, age, and mental health status) based on a dataset comprising 1,542 participants (71% female, mean<sub>age</sub>=38.6 years, SD=15.0). Study 2 reexamined the factorial structure in an independent sample (N=728, 64.88% females, mean<sub>age</sub>=30.94 years, SD=14.07), and assessed both convergent validity (with psychological flexibility/inflexibility measures) and concurrent validity (with measures distress and well-being measures). Confirmatory factor analyses demonstrated very good fit indices for a first-order model comprised of the twelve psychological flexibility and inflexibility sub-processes. In addition, the model structured with two second-order factors—psychological flexibility and inflexibility—each defined by six core sub-processes, showed a good model fit. The Italian MPFI-24 also exhibited strong internal consistency and good convergent and concurrent validity. Measurement invariance was established for gender, age, and mental health status. The Italian MPFI-24 is a psychometrically sound instrument for evaluating psychological flexibility and inflexibility, along with their underlying sub-processes, in an Italian context.

**Keywords:** MPFI-24; scale validation; psychological flexibility; psychological inflexibility; psychometric properties

## 1. Introduction

Psychological flexibility refers to the ability to engage with the present moment in a conscious and open way, and to adapt behavior in ways that are consistent with one's personal values, even when facing psychological challenges [1]. From a contextual behavioral science perspective it is considered a transdiagnostic construct. This construct is at the core of acceptance and commitment therapy (ACT), which identifies six psychological flexibility sub-processes: (1) acceptance, (2) defusion, (3) present moment awareness, (4) self-as-context, (5) values, and (6) committed action [2]. Its counterpart is psychological inflexibility which includes six corresponding opposing sub-processes: (1) experiential avoidance, (2) lack of present moment awareness, (3) self-as-content, (4)

fusion, (5) restricted valuing repertoire, and (6) inaction and impulsiveness [2]. The central objective of ACT is to strengthen psychological flexibility and thereby foster mental health. Evidence from both field and laboratory studies show that greater psychological flexibility is linked to improved mental health [3–5] and higher psychological inflexibility is linked to more psychopathology [6,7] across diverse populations and settings. A meta-analysis of meta-analytic studies has confirmed the effectiveness of ACT in treating a broad spectrum of mental health problems [8]. Furthermore, evidence suggests that ACT brings about therapeutic benefits primarily by fostering psychological flexibility, which serves as the central mechanism of change in the psychological flexibility framework [9].

### *1.1. Measurement of Psychological Flexibility/Inflexibility*

The only validated self-report instrument currently available that assesses both psychological flexibility and psychological inflexibility and their corresponding six sub-processes is the Multidimensional Psychological Flexibility Inventory (MPFI) [10]. The MPFI scale consists of 60 items, with the flexibility and inflexibility scales each consisting of 30 items. Five distinct items were designed to assess each flexibility and inflexibility sub-process. Factor analytic studies have confirmed that the MPFI's factor structure aligns with the theoretical model of psychological flexibility. Specifically, psychological flexibility and inflexibility emerge as two higher order factors, each composed of six distinct first-order sub-processes [10–13]. Evidence of convergent validity is reflected in the consistent alignment of both global and subscale psychological flexibility and inflexibility scores with established measures designed to assess similar psychological constructs [10]. Empirical studies have supported the discriminant validity of the MPFI by revealing expected-pattern associations between its twelve sub-processes—reflecting psychological flexibility and inflexibility—and conceptually unrelated constructs such as neuroticism, emotional intelligence, inattention, and rumination, as well as with diverse indicators of individual well-being, including psychological distress, relationship satisfaction, and vitality [10]. Evidence for the discriminant validity of the MPFI psychological flexibility scale in relation to distress was provided by a study demonstrating that the six psychological flexibility sub-processes loaded on a psychological flexibility factor, whereas anxiety and depression and a widely used proxy measure of psychological flexibility (Acceptance and Action Questionnaire-II; [14]) loaded on a distress factor [15]. Results from convergent and discriminative validity analyses revealed that the twelve sub-processes differed in their associations with related constructs and were identified as distinct components capable of functioning independently from one another [10,16]. Additionally, the MPFI has demonstrated sensitivity to change over time [10], and capacity to distinguish individuals receiving psychological counseling [16], and it has exhibited significant associations with both psychological distress and indicators of individual wellbeing [10,17]. The MPFI has been translated into various languages and culturally adapted and validated in numerous countries (e.g., Sweden, [18]; Italy, [19]; Iran, [20]; China, [12], and Japan, [12]).

The length of the MPFI has however raised concerns about potential response bias affecting reliability [21,22] and the burden it places on respondents thereby precluding its use in some studies. Hence, to broaden applicability of the MPFI, Rolffs et al. [10] used item response theory to develop a shorter version with two items tapping each of the twelve sub-processes, yielding a 24-item measure (MPFI-24). The MPFI-24 preserves the essential theoretical constructs while offering a more efficient format for assessment by the reduced number of items. The MPFI-24 offers a convenient and efficient method for assessing psychological flexibility and inflexibility, particularly in resource-constrained situations such as large-scale epidemiological research or cross-cultural studies [22] and time-constrained investigations such as experiential momentary assessment studies or national screening surveys [11]. Evidence indicates that the MPFI-24 subscales effectively assesses the twelve psychological flexibility and inflexibility sub-processes [11,20]. Results of factor analytic studies of the MPFI-24 replicate the MPFI factor structure entailing a second-order structure, characterized by global psychological flexibility and inflexibility, and a first-order factor structure that corresponds

with the twelve sub-processes [11,20,22]. This factor structure aligns with the ACT psychological flexibility framework.

The MPFI-24, in its original English form, has demonstrated acceptable levels of internal consistency across various populations, and a slightly lower reliability compared to the parent scale, which is likely attributable to the brevity of each subscale [10,11]. The MPFI-24 has also been adapted to various cultures and translated into multiple languages, including French [11], Chinese [22], Persian [20], and Spanish [23]. Across these adaptations, the MPFI-24 has demonstrated full measurement invariance in relation to mental health status [20], gender [20,22], and language [11]. The MPFI-24 demonstrated convergent validity through significant associations between its subscales and other conceptually similar measures of psychological flexibility/inflexibility [11,20,22,23]. The discriminant validity of the MPFI-24 has also been supported by studies showing its differential associations with positive (i.e., being) and negative (i.e., distress) mental health indicators [11,20]. Studies have also shown the MPFI-24 psychological flexibility and inflexibility scales demonstrate adequate temporal stability across a range of populations [10,11,20,22].

### 1.2. The Present Research

Based on the MPFI Italian validation [19], we conducted two studies designed to evaluate the psychometric performance of the Italian adaptation of the MPFI-24. Study 1 investigated the Italian MPFI-24 factorial structure, reliability and the stability of measurement across demographic and clinical subgroups. Study 2 reexamined the factor structure in an independent sample and assessed the convergent and concurrent validity of the Italian MPFI-24.

## 2. Study 1

Study 1 investigates psychometric characteristics of the Italian version of the MPFI-24 with respect to factor structure, reliability, inter-factor correlations, and measurement invariance across gender, age, and mental health status.

### 2.1. Materials and Methods

#### 2.1.1. Recruitment Procedure and Participants

A total of 1,693 Italian-speaking adults (aged 18 and above) took part in an online survey distributed nationwide. Recruitment occurred through WhatsApp and Facebook and a snowball sampling strategy, from July to October 2023. The survey was developed using Qualtrics software and because of the recruitment methods used, it was not feasible to calculate an exact response rate. All participants provided informed consent prior to undertaking the survey. The study received ethical approval from the University of Bologna research ethics committee.

The sample included 77.55% ( $n=1,313$ ) females, with a mean age of 33.38 years ( $SD=13.64$ ; range 18–82). Highest education levels were bachelor's/master's degree ( $n=903$ ; 53.34%), high school ( $n=720$ ; 42.53%), and middle school ( $n=70$ ; 4.14%). Regarding employment status, 45.96% ( $n=778$ ) were employed, 38.04% ( $n=644$ ) were students, 7.80% ( $n=132$ ) unemployed, 3.31% ( $n=56$ ) were retired, and 4.89% ( $n=83$ ) 'other'. Almost half (50.8%,  $n=860$ ) of the sample were partnered or married, 44.5% were single ( $n=753$ ), while 4.73% ( $n=80$ ) were widowed/divorced. Concerning socioeconomic status, 17.25% of the participants ( $n=295$ ) reported below-average income, 72.89% ( $n=1,234$ ) middle-income, and 9.86% ( $n=167$ ) above average. Furthermore, nearly one-third of the sample (29.4%,  $n=498$ ) reported they were currently experiencing psychological or psychiatric challenges, including ongoing therapy and/or medication use.

#### 2.1.2. Measures

**MPFI-24** [11]. The MPFI-24 is a 24-item scale derived from its parent scale [10]. Twelve items each assess psychological flexibility and psychological inflexibility and two assess each of their six

constituent sub-processes. Items are scored on a 6-point scale, where 1 indicates “*never true*” and 6 indicates “*always true*.” To assess specific sub-processes, scores from pairs of items of each subscale are averaged. Global psychological flexibility and inflexibility scores are calculated by averaging scores across the 12 items for each scale. Higher global psychological flexibility and inflexibility scores reflect higher levels their underlying construct.

### 2.1.3. Data Analysis

Most analyses were carried out using SPSS version 29. IBM AMOS 26 with the maximum likelihood estimator was employed to evaluate the factor structure of the instrument, with three first-order confirmatory factor analyses (CFAs)—a one-factor, two-factor, and twelve-factor model—and two second-order CFAs—one with a single higher-order factor and another with two higher-order factors. Following best practices in CFA, we relied on the following indices Comparative Fit Index (CFI) Chi-Square statistics ( $\chi^2$ ), Tucker-Lewis Index (TLI) and Root Mean Square Error of Approximation (RMSEA) [24] to evaluate model adequacy. Values above 0.90 of the CFI and TLI, and values below or equal to 0.08 of RMSEA were interpreted as good model fit [25]. Akaike Information Criterion (AIC), and Bayesian Information Criterion (BIC) were used to compare and select the optimal model, with lower values reflecting improved fit [26]. Reliability was assessed using Cronbach’s alpha and the relative 95% CI. Following Cohen’s [27] benchmarks, correlations coefficients were interpreted as small (0.10), moderate (0.30), and large (0.50).

Gender, age, and mental health status measurement invariance was examined using Multi-group CFA. Following common practice for examining measurement invariance [28], we treated age categorically by creating two subsamples based on the median. First, configural invariance was assessed by allowing all model parameters to be freely estimated, ensuring that the basic factor structure was comparable across groups. Second, metric invariance was evaluated by constraining factor loadings to be equal across groups and comparing the model fit to the configural model. Third, scalar invariance was tested by imposing equality constraints on both factor loadings and item intercepts, with its fit compared to the precedent model. Finally, residual invariance was examined by constraining factor loadings, intercepts, and residual variances simultaneously across groups. To determine measurement invariance, we used criteria that are widely recognized in the literature [29–31]. Following established guidelines, measurement invariance was supported when observed changes in model fit indices did not exceed the conventional cut-offs of  $\Delta\text{CFI} \leq 0.01$ ,  $\Delta\text{TLI} \leq 0.01$ , and  $\Delta\text{RMSEA} \leq 0.015$ . These criteria were adopted as they are less influenced by sample size and model complexity than the  $\chi^2$  criterion [32], which is also reported for each model.

## 2.2. Results

### 2.2.1. Italian MPFI-24 Descriptives

Means, SDs, skewness and kurtosis for each Italian MPFI-24 item are presented in Table A of Supplementary Materials. The observed item responses covered the full scale range, with item ratings distributed evenly across the numerical rating scale, suggesting an approximately normal distribution. These indices thereby supported the use of the maximum likelihood estimator for CFAs.

### 2.2.2. Factor Structure of the Italian MPFI-24

To evaluate the factor structure of the Italian MPFI-24, five models were tested. The first was a one-factor model, assuming that all items reflect a single overarching factor. The second model proposed a two-factor model, in which items were loaded on one of two overarching factors, psychological flexibility or psychological inflexibility. The third model treated each of the twelve sub-processes represented by the subscales of the MPFI-24 as distinct first-order factors. The fourth and fifth models were the one-factor second-order structure which included twelve first-order factors (i.e., the MPFI-24 subscales), and the two-factor second-order model including six first-order factors (i.e., the MPFI-24 subscales) for each of the second order factors (i.e., psychological flexibility and

psychological inflexibility). Although the one and two-factor models demonstrated poor model fit, the twelve-factor model showed very good fit indices  $\chi^2=565.71$ ,  $\chi^2/df=2.92$ ; CFI=0.98; TLI=0.98; RMSEA=0.034; RMSEA CI=[.030, .037]; SRMR=0.06 (see Table 1).

Table 1. Fit Indices for the Factorial Structure of the Italian MPFI-24 (N=1,693).

| Model                         | $\chi^2$          | $\chi^2/df$  | CFI         | TLI         | RMSEA [90% CI]          | SRMR        |
|-------------------------------|-------------------|--------------|-------------|-------------|-------------------------|-------------|
| One-factor model              | 12971.031***      | 51.472       | .496        | .448        | .173 [.170-.175]        | .122        |
| Two-factor model              | 10140.187***      | 40.399       | .608        | .569        | .153 [.150-.155]        | .100        |
| <b>Twelve-factor model</b>    | <b>565.714***</b> | <b>2.916</b> | <b>.985</b> | <b>.979</b> | <b>.034 [.030-.037]</b> | <b>.059</b> |
| One-factor second order model | 2634.415***       | 10.977       | .905        | .891        | .077 [.074-.079]        | .071        |
| Two-factor second order model | 1701.942***       | 7.121        | .942        | .933        | .060 [.057-.063]        | .063        |

Note. CFI=Comparative Fit Index; TLI=Tucker-Lewis Index; RMSEA=Root Mean Square Error of Approximation; SRMR=Standardized Root Mean Square Residuals. CI=confidence interval. \*\*\* $p<.001$ .

Fit indices for the second order model were not adequate for the one-factor model, but they were good for the two-factor model. Strong internal consistency was observed for the global scales of psychological flexibility and inflexibility, as reflected by Cronbach’s alpha values of 0.89 and 0.87, respectively. Internal consistency for the twelve sub-process scales varied from 0.71 to 0.92, indicating acceptable to high reliability. Factor loadings for the twelve-factor structure are displayed in Table 2.

Table 2. Factor Loadings and Reliability Indices of the Italian MPFI-24 (N=1,693).

| Factor                             | $\beta$ | $\alpha$ (95% CI) | Factor                                     | $\beta$ | $\alpha$ (95% CI) |
|------------------------------------|---------|-------------------|--------------------------------------------|---------|-------------------|
| <b>Psychological flexibility</b>   |         |                   | <b>Psychological inflexibility</b>         |         |                   |
| <i>Acceptance</i>                  |         | .707 (.677-.733)  | <i>Experiential avoidance</i>              |         | .868 (.854-.880)  |
| MPFI 1                             | .690*** |                   | MPFI 13                                    | .935*** |                   |
| MPFI 2                             | .791*** |                   | MPFI 14                                    | .822*** |                   |
| <i>Contact with present moment</i> |         | .840 (.825-.855)  | <i>Lack of contact with present moment</i> |         | .877 (.865-.889)  |
| MPFI 3                             | .852*** |                   | MPFI 15                                    | .903*** |                   |
| MPFI 4                             | .851*** |                   | MPFI 16                                    | .861*** |                   |
| <i>Self-as-context</i>             |         | .804 (.785-.822)  | <i>Self-as-content</i>                     |         | .884 (.872-.894)  |
| MPFI 5                             | .782*** |                   | MPFI 17                                    | .886*** |                   |
| MPFI 6                             | .851*** |                   | MPFI 18                                    | .892*** |                   |
| <i>Defusion</i>                    |         | .912 (.903-.920)  | <i>Fusion</i>                              |         | .900 (.890-.909)  |
| MPFI 7                             | .915*** |                   | MPFI 19                                    | .919*** |                   |
| MPFI 8                             | .905*** |                   | MPFI 20                                    | .889*** |                   |
| <i>Contact with values</i>         |         | .737 (.710-.760)  | <i>Lack of contact with values</i>         |         | .821 (.803-.837)  |
| MPFI 9                             | .740*** |                   | MPFI 21                                    | .824*** |                   |
| MPFI 10                            | .777*** |                   | MPFI 22                                    | .836*** |                   |
| <i>Committed action</i>            |         | .845 (.830-.859)  | <i>Inaction</i>                            |         | .924 (.917-.931)  |
| MPFI 11                            | .806*** |                   | MPFI 23                                    | .913*** |                   |
| MPFI 12                            | .903*** |                   | MPFI 24                                    | .935*** |                   |

Note.  $\beta$ =standardized factor loading; SE=standard error; \*\*\* $p<.001$ ;  $\alpha$ =Cronbach’s alpha; CI=confidence interval.

2.2.3. Intercorrelations Among the Italian MPFI-24 Factors

Table 3 summarizes the intercorrelations among the Italian MPFI-24 subscales. Significant positive correlations were evinced between global psychological flexibility and all six flexibility sub-processes, with coefficients in the large range (0.67–0.81,  $p<.001$ ). All sub-processes within the psychological flexibility domain were positively and significantly correlated, with the majority of intercorrelations falling within the moderate to large magnitude (range 0.32–0.62,  $p<.001$ ). Likewise, global psychological inflexibility was moderately associated with all corresponding sub-processes (range 0.32–0.80,  $p<.001$ ), which also demonstrated significant positive intercorrelations, with

coefficients ranging from moderate to large (range 0.41–0.74,  $p<.001$ ), except for experiential avoidance. It had small positive associations with lack of contact with present moment ( $r=0.12$ ,  $p<.001$ ) and self-as-content ( $r=0.19$ ,  $p<.001$ ), but was not significantly associated with the remaining psychological inflexibility sub-processes. Correlations between global and sub-process scores of psychological flexibility and inflexibility were generally negative, significant and ranged from small to moderate in magnitude (range -0.05– -0.53,  $p<.05$ ). Contrary to expectations, experiential avoidance was weakly but significantly correlated with three out of six flexibility sub-processes (range = 0.05– 0.11,  $p<.05$ ), and had a non-significant positive relationship with the global psychological flexibility score ( $r=0.02$ ,  $ns$ ).

**Table 3.** Intercorrelations among the Italian MPFI-24 Global Psychological Flexibility and Inflexibility Scales and Sub-processes (N=1,693).

|                                         | M<br>(SD)      | 1        | 1a       | 1b       | 1c       | 1d       | 1e      | 1f      | 2      | 2a     | 2b     | 2c     | 2d     | 2e     |
|-----------------------------------------|----------------|----------|----------|----------|----------|----------|---------|---------|--------|--------|--------|--------|--------|--------|
| 1. Global Psychological Flexibility     | 3.76<br>(0.82) | -        |          |          |          |          |         |         |        |        |        |        |        |        |
| 1a. Acceptance                          | 3.42<br>(1.03) | .682***  | -        |          |          |          |         |         |        |        |        |        |        |        |
| 1b. Present Moment Awareness            | 3.97<br>(1.13) | .674***  | .414***  | -        |          |          |         |         |        |        |        |        |        |        |
| 1c. Self-as-context                     | 3.75<br>(1.13) | .808***  | .503***  | .463***  | -        |          |         |         |        |        |        |        |        |        |
| 1d. Defusion                            | 3.30<br>(1.17) | .759***  | .473***  | .317***  | .605***  | -        |         |         |        |        |        |        |        |        |
| 1e. Values                              | 4.09<br>(1.09) | .743***  | .322***  | .416***  | .486***  | .454***  | -       |         |        |        |        |        |        |        |
| 1f. Committed Action                    | 4.04<br>(1.14) | .757***  | .346***  | .376***  | .510***  | .487***  | .620**  | -       |        |        |        |        |        |        |
| 2. Global Psychological Inflexibility   | 2.98<br>(0.85) | -.522*** | -.327*** | -.279*** | -.387*** | -.538*** | -.400** | -.372** | -      |        |        |        |        |        |
| 2a. Experiential avoidance              | 3.58<br>(1.16) | .020     | .151***  | .054*    | .052*    | .033     | .112**  | .085**  | .318** | -      |        |        |        |        |
| 2b. Lack of contact with present moment | 2.85<br>(1.19) | -.357*** | -.179*** | -.307*** | -.256*** | -.261*** | -.310** | -.265** | .665** | .122** | -      |        |        |        |
| 2c. Self-as-content                     | 2.93<br>(1.14) | -.354*** | -.244*** | -.186*** | -.267*** | -.416*** | -.221** | -.225** | .757** | .188** | .384** | -      |        |        |
| 2d. Fusion                              | 3.15<br>(1.37) | -.433*** | -.247*** | -.132*** | -.355*** | -.572*** | -.229** | -.296** | .784** | .29    | .370** | .536** | -      |        |
| 2e. Lack of contact with values         | 2.73<br>(1.14) | -.430*** | -.198*** | -.239*** | -.291*** | -.329*** | -.468** | -.377** | .682** | -.010  | .450** | .370** | .439** | -      |
| 2f. Inaction                            | 2.63<br>(1.33) | -.526*** | -.289*** | -.218**  | -.415*** | -.562*** | -.424** | -.408** | .797** | .026   | .391** | .494** | .699** | .539** |

<sup>1</sup> \* $p<.05$ , \*\* $p<.01$ , \*\*\* $p<.001$ .

2.2.4. Measurement Invariance

Table B of Supplementary Materials reports findings on measurement invariance of the Italian MPFI-24. Specifically, we compared male ( $n=366$ , age range 18–81 years,  $M=35.08$ ,  $SD=14.52$ ) vs. female ( $n=1313$ , age range 18–82 years,  $M=32.97$ ,  $SD = 13.38$ ) samples, younger ( $n=842$ , 79% females, age range 18–26 years,  $M=23.30$ ,  $SD = 2.25$ ) vs. older ( $n=843$ , 76% females, age range 27–82 years,  $M=43.46$ ,  $SD=12.81$ ) samples, and clinical ( $n=498$ , 83% females, age range 18–82 years,  $M=30.93$ ,  $SD=11.16$ ) vs. community ( $n=1195$ , 75% females, age range 18–81 years,  $M=34.40$ ,  $SD=14.44$ ) samples. The fit indices of each tested model (configural, metric, scalar, and residual) were adequate. All model comparisons showed values of  $\Delta CFI$  and  $\Delta TLI$  below or equal to 0.01, and values of  $\Delta RMSEA$  below or equal to 0.015. Thus, evidence indicates that invariance for the Italian MPFI-24 holds across gender, age, and mental health status.

2.3. Discussion

CFAs of the Italian MPFI-24 confirmed a first-order structure composed of twelve distinct psychological flexibility and inflexibility sub-processes. Additionally, the data supported a second-order model, where global psychological flexibility and inflexibility emerged as two higher-order latent constructs, each encompassing six related first-order sub-processes. Similar results have been reported in other factor analytic validation studies of the MPFI-24 (e.g., Persian, [20]; Spanish, [23]), which similarly tested both models and found the first-order twelve-factor structure to have superior fit. Our results concerning the second-order two-factor structure are also aligned with those of previous studies that only assessed the second-order two-factor structure of the MPFI-24 (original English and French, [11]; Chinese, [22]). Overall, the factor for the Italian MPFI-24 identified in this study is consistent with the structure established in the original version of the MPFI-24.

The Italian MPFI-24 global psychological flexibility and inflexibility scales demonstrated good internal consistency and their corresponding sub-processes demonstrated reliability coefficients ranging from adequate to excellent (0.71–0.92), and are comparable to those reported for the original English MPFI-24 (0.75–0.92) [11]. Furthermore, the pattern of intercorrelations among the subscales of the Italian MPFI-24 provided evidence for construct validity, demonstrating that while the psychological flexibility and inflexibility global and sub-process scores are correlated in theoretically expected directions, they remain empirically discrete constructs with only moderate overlap. Additionally, measurement invariance analyses confirmed that the Italian MPFI-24 functions consistently across different gender, age, and mental health groups. These psychometric properties align with those of previous MPFI-24 validation studies across cultures [20,22].

3. Study 2

Study 2 aimed to reexamine the factorial structure of the Italian MPFI-24 in an independent sample, and to evaluate convergent and concurrent validity. Regarding convergent validity, we expected the Italian MPFI-24 global psychological flexibility and sub-processes to be positively and inversely related to other validated measures of psychological flexibility and inflexibility, respectively. We expected the reverse pattern of correlations between the Italian MPFI-24 global psychological inflexibility and sub-processes and other validated measures of psychological flexibility/inflexibility. Further, considering the critical contribution of mindfulness as a component of psychological flexibility, which is proposed to influence all twelve sub-processes in the ACT psychological flexibility framework [2], we also explored correlations between trait mindfulness and MPFI-24 scores to further assess its convergent validity.

Regarding concurrent validity, in line with the ACT psychological flexibility/inflexibility framework, we expected the Italian MPFI-24 global psychological flexibility and sub-process scales to be positively and inversely related to validated measures of psychological distress and well-being, respectively. We expected the reverse pattern of correlations between the Italian MPFI-24 global psychological inflexibility and sub-process scales and validated measures of distress and well-being.

3.1. Materials and Methods

### 3.1.1. Recruitment Procedure and Participants

A total of 503 participants completed an online nationwide survey in Italy. Eligibility criteria included being 18 years or older and fluent in Italian. The survey was developed using Qualtrics and disseminated via Facebook, WhatsApp, and Instagram. Recruitment was facilitated through advertisements on social networks, combined with a snowball sampling method, from November to December 2023. Response rate could not be determined due to the recruitment methods used. All Participation was voluntary, and informed consent was obtained prior to survey completion.

The sample comprised 64.88% females ( $n=327$ ), with a mean age of 30.94 years ( $SD=14.07$ ; range 18–86). Most held a high school diploma ( $n=343$ ; 68.06%), followed by bachelor's/master's degrees ( $n=82$ ; 16.47%), and middle school diploma ( $n=51$ ; 10.12%). Regarding employment status, 233 participants (46.32%) were students, 187 (37.18%) were employed, and 83 (16.50%) were unemployed. Almost half of the participants ( $n=220$ ; 43.74%) were single, while 283 (56.26%) were partnered or married. Regarding socioeconomic status, 30.75% ( $n=312$ ) reported below-average income, 59.93% ( $n=302$ ) middle-income, and 9.13% ( $n=46$ ) above average. Moreover, 11.11% ( $n=56$ ) of the sample reported that they were currently experiencing psychological or psychiatric challenges, including ongoing therapy and/or medication use.

### 3.1.2. Measures

Convergent validity the Italian MPFI-24 was evaluated by examining correlations between the Italian MPFI-24 factors and other established measures of psychological inflexibility/flexibility, as well as a measure of trait mindfulness. The investigation of concurrent validity involved correlations between Italian MPFI-24 scores and those of validated indices of distress and psychological well-being. Measures used to test convergent and concurrent validity are described below.

**Acceptance and Action Questionnaire-II (AAQ-II**; [14]). The AAQ-II assesses psychological inflexibility. Its validated Italian version [33] consists of 10 items rated on a 7-point scale, where 1 indicates “*never true*” and 7 indicates “*always true*”. Higher scores indicate greater psychological inflexibility. Observed Cronbach’s  $\alpha=0.81$ .

**Comprehensive Assessment of Acceptance and Commitment Therapy Processes (CompACT**; [34]). Psychological flexibility was assessed by the validated Italian CompACT [35], a validated 23-item questionnaire with responses recorded on a 6-point scale, where 1 indicates “strongly disagree” and 6 indicates “strongly agree”. The questionnaire assesses three subdimensions: openness to experience, behavioral awareness, and valued action. All items were reverse-coded, meaning higher scores across the total and subscales indicate greater psychological flexibility. The total scale demonstrated a strong internal consistency (observed Cronbach’s  $\alpha=0.82$ ), while subscale reliabilities ranged from 0.69 to 0.86.

**Mindful Attention Awareness Scale (MAAS**; [36]). Trait mindfulness was examined by the validated Italian version of the MAAS [37]. This 15-item scale has a 6-point likert response format where 1 indicates “*almost always*” and 6 indicates “*almost never*”. Higher total scores indicate greater mindfulness (observed Cronbach’s  $\alpha=0.89$ ).

**Depression, Anxiety, and Stress Scale - 21 (DASS-21**; [38]). Psychological distress was measured using the validated Italian DASS-21 [39], which consists of 21 items rated on a 4-point scale, where 0 indicates “*did not apply to me at all*” and 3 indicates “*applied to me very much, or most of the time*”. This instrument includes three subdomains: depression, anxiety, and stress. Reliability estimates (observed Cronbach’s  $\alpha$ ) varied from 0.87 to 0.89 across the subscales.

**Well-being Numerical Rating Scales (WB-NRSs**; [40]). The WB-NRSs provides a brief multidimensional assessment of well-being. It has five items with each rated on a 10-point scale [40]. Higher scores indicate increases in well-being. The WB-NRSs evaluates five well-being dimensions: physical, psychological, spiritual, relational, and overall well-being (observed Cronbach’s  $\alpha=0.88$ ).

### 3.1.3. Data Analysis

Most of the analyses were carried out using SPSS version 29. IBM AMOS 26 with the maximum likelihood estimator was employed to re-examine the factor structure of the instrument. We analyzed both the first-order model constituted by the twelve MPFI-24 psychological flexibility and inflexibility sub-processes as first order factors as well as the second-order model in which psychological flexibility and inflexibility were modeled as two higher-order latent constructs, each defined by their respective six first-order sub-processes. The same fit indices used in Study 1 were employed to evaluate model fit.

The Italian MPFI-24’s convergent validity was examined through Pearson correlations with other measures of psychological flexibility/inflexibility (i.e., AAQ-II and CompACT) as well as a measure of trait mindfulness (i.e., MAAS). To assess concurrent validity, we examined correlations between the Italian MPFI-24 and established measures of psychological distress (i.e., DASS-21) and well-being (i.e., WB-NRS).

3.2. Results

3.2.1. Reexamination of the Factorial Structure of the Italian MPFI-24

To reexamine the factor structure of the Italian MPFI-24, we conducted two CFAs (testing the twelve-factor and the two-factor second order models). The analyses replicated the results of Study 1 with CFAs showing a very good fit ( $\chi^2=395.28$ ,  $\chi^2/df=2.04$ , CFI=.97, TLI=.95, RMSEA=.045 [.039-.052], SRMR=.043) for the twelve-factor solution, with all loadings significant ( $p < .001$ ) and greater than 0.56. Similarly, the two-factor second-order model had a good fit ( $\chi^2=748.77$ ,  $\chi^2/df=3.13$ , CFI=.91, TLI=.90, RMSEA=.065 [.060-.070], SRMR=.078).

3.2.2. Convergent Validity

As shown in Table 4 and in line with our hypotheses, global psychological flexibility and its six sub-processes were negatively correlated with the AAQ-II, with most coefficients falling in the small to moderate range ( $r = -0.10$  to  $-0.36$ ,  $p < .05$ ), and thereby supporting convergent validity. Also consistent with expectations, global psychological flexibility and the six psychological flexibility sub-processes exhibited positive correlations with the total score and most subscales of the CompACT ( $r=0.09$  to  $0.57$ ,  $p < .05$ ). As expected, global psychological inflexibility and five of its sub-processes demonstrated significant positive correlations with the AAQ-II, with moderate to large correlation coefficients (range  $0.28-0.55$ ,  $p < .01$ ). Nonetheless, the association between experiential avoidance and the AAQ-II was not statistically significant. Consistent with our expectations, global psychological inflexibility and its sub-processes showed significant negative correlations with both the total and subscale scores of the CompACT (range  $-0.09- -0.67$ ,  $p < .05$ ). The only exception was experiential avoidance, which displayed a small significant positive correlation with the valued action subscale of the CompACT ( $r=0.23$ ,  $p < .001$ ).

**Table 4.** Correlations Among the Italian MPFI-24 Global Psychological Flexibility and Inflexibility Scales and Sub-processes, other Measures of Psychological Flexibility and Inflexibility, Mindfulness, Psychological Distress, and Well-being (N = 503).

|                                                      | AAQ-II            | CopA<br>CT<br>Openn<br>ess to<br>experie<br>nce | CopA<br>CT<br>Behavi<br>oral<br>awareness | CopA<br>CT<br>Valued<br>Action | Comp<br>ACT<br>Total | MASS<br>Mindful<br>ness | DASS-<br>21<br>Depress<br>ion | DASS-<br>21<br>Anxiety | DASS-<br>21<br>Stress | WB-<br>NRSs<br>Physical | WB-<br>NRSs<br>Psychol<br>ogical | WB-<br>NRSs<br>Spiritua<br>l | WB-<br>NRSs<br>Relation<br>al | WB-<br>NRSs<br>General |
|------------------------------------------------------|-------------------|-------------------------------------------------|-------------------------------------------|--------------------------------|----------------------|-------------------------|-------------------------------|------------------------|-----------------------|-------------------------|----------------------------------|------------------------------|-------------------------------|------------------------|
| 1.<br>Global<br>Psycho<br>logical<br>Flexibil<br>ity | -<br>0.340**<br>* | 0.221**<br>*                                    | 0.251**<br>*                              | 0.571**<br>*                   | 0.476**<br>*         | 0.347***                | -0.300***                     | -0.236***              | -0.192***             | 0.256***                | 0.405***                         | 0.390***                     | 0.355***                      | 0.354***               |
| 1a.<br>Acceptance                                    | -0.104*<br>*      | 0.142**                                         | -0.026                                    | 0.283**<br>*                   | 0.187**<br>*         | 0.148***                | -0.095*                       | -0.074                 | -0.048                | 0.159***                | 0.229***                         | 0.183***                     | 0.168***                      | 0.125**                |

|               |         |         |         |         |         |           |           |           |           |           |           |           |           |           |
|---------------|---------|---------|---------|---------|---------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| 1b.           |         |         |         |         |         |           |           |           |           |           |           |           |           |           |
| Present       | -       |         |         |         |         |           |           |           |           |           |           |           |           |           |
| Moment        | 0.209** | 0.172** | 0.217** | 0.384** | 0.354** | 0.246***  | -0.167*** | -0.152*** | -0.092*   | 0.160***  | 0.257***  | 0.254***  | 0.229***  | 0.231***  |
| Awareness     | *       | *       | *       | *       | *       |           |           |           |           |           |           |           |           |           |
| 1c.           |         |         |         |         |         |           |           |           |           |           |           |           |           |           |
| Self-as-      | -       |         |         |         |         |           |           |           |           |           |           |           |           |           |
| context       | 0.259** | 0.164** | 0.192** | 0.445** | 0.365** | 0.260***  | -0.256*** | -0.209*** | -0.157*** | 0.194***  | 0.304***  | 0.300***  | 0.243***  | 0.298***  |
|               | *       | *       | *       | *       | *       |           |           |           |           |           |           |           |           |           |
| 1d.           |         |         |         |         |         |           |           |           |           |           |           |           |           |           |
| Defusion      | -       |         |         |         |         |           |           |           |           |           |           |           |           |           |
| on            | 0.361** | 0.230** | 0.180** | 0.368** | 0.360** | 0.296***  | -0.348*** | -0.232*** | -0.339*** | 0.189***  | 0.381***  | 0.342***  | 0.351***  | 0.335***  |
|               | *       | *       | *       | *       | *       |           |           |           |           |           |           |           |           |           |
| 1e.           |         |         |         |         |         |           |           |           |           |           |           |           |           |           |
| Values        | -       |         |         |         |         |           |           |           |           |           |           |           |           |           |
|               | 0.271** | 0.131** | 0.257** | 0.517** | 0.408** | 0.296***  | -0.238*** | -0.173*** | -0.089*   | 0.239***  | 0.318***  | 0.324***  | 0.290***  | 0.293***  |
|               | *       | *       | *       | *       | *       |           |           |           |           |           |           |           |           |           |
| 1f.           |         |         |         |         |         |           |           |           |           |           |           |           |           |           |
| Committed     | -       |         |         |         |         |           |           |           |           |           |           |           |           |           |
| Action        | 0.318** | 0.155** | 0.303** | 0.580** | 0.467** | 0.317***  | -0.240*** | -0.219*** | -0.125**  | 0.256***  | 0.337***  | 0.352***  | 0.312***  | 0.308***  |
|               | *       | *       | *       | *       | *       |           |           |           |           |           |           |           |           |           |
| 2.            |         |         |         |         |         |           |           |           |           |           |           |           |           |           |
| Global        |         |         |         |         |         |           |           |           |           |           |           |           |           |           |
| Psychological | 0.539** | -       | -       | -       | -       | -0.306*** | 0.457***  | 0.376***  | 0.378***  | -0.170*** | -0.321*** | -0.316*** | -0.270*** | -0.281*** |
| Inflexibility | *       | *       | *       | *       | *       |           |           |           |           |           |           |           |           |           |
| 2a.           |         |         |         |         |         |           |           |           |           |           |           |           |           |           |
| Experiential  | 0.027   | -       |         | 0.233** | -0.091* | 0.013     | 0.080     | 0.034     | 0.124**   | 0.107*    | 0.133**   | 0.114*    | 0.130**   | 0.084     |
| avoidance     |         | *       |         | *       |         |           |           |           |           |           |           |           |           |           |
| 2b.           |         |         |         |         |         |           |           |           |           |           |           |           |           |           |
| Lack of       |         |         |         |         |         |           |           |           |           |           |           |           |           |           |
| contact       | 0.282** | -       | -       | -       | -       | -0.256*** | 0.277***  | 0.277***  | 0.229***  | -0.100*   | -0.157*** | -0.165*** | -0.183*** | -0.189*** |
| with          | *       | *       | *       | *       | *       |           |           |           |           |           |           |           |           |           |
| present       |         |         |         |         |         |           |           |           |           |           |           |           |           |           |
| moment        |         |         |         |         |         |           |           |           |           |           |           |           |           |           |
| t             |         |         |         |         |         |           |           |           |           |           |           |           |           |           |
| 2c.           |         |         |         |         |         |           |           |           |           |           |           |           |           |           |
| Self-as-      | 0.441** | -       | -       | -       | -       | -0.307*** | 0.385***  | 0.294***  | 0.338***  | -0.146**  | -0.265*** | -0.271*** | -0.225*** | -0.208*** |
| content       | *       | *       | *       | *       | *       |           |           |           |           |           |           |           |           |           |
| 2d.           |         |         |         |         |         |           |           |           |           |           |           |           |           |           |
| Fusion        | 0.559** | -       | -       | -       | -       | -0.253*** | 0.451***  | 0.379***  | 0.406***  | -0.204*** | -0.364*** | -0.319*** | -0.311*** | -0.327*** |
|               | *       | *       | *       | *       | *       |           |           |           |           |           |           |           |           |           |
| 2e.           |         |         |         |         |         |           |           |           |           |           |           |           |           |           |
| Lack of       | 0.426** | -       | -       | -       | -       | -0.256*** | 0.328***  | 0.288***  | 0.203***  | -0.152*** | -0.275*** | -0.276*** | -0.193*** | -0.226*** |
| contact       | *       | *       | *       | *       | *       |           |           |           |           |           |           |           |           |           |
| with          |         |         |         |         |         |           |           |           |           |           |           |           |           |           |
| values        |         |         |         |         |         |           |           |           |           |           |           |           |           |           |
| 2f.           |         |         |         |         |         |           |           |           |           |           |           |           |           |           |
| Inaction      | 0.523** | -       | -       | -       | -       | -0.232*** | 0.406***  | 0.313***  | 0.301***  | -0.200*** | -0.391*** | -0.383*** | -0.327*** | -0.299*** |
|               | *       | *       | *       | *       | *       |           |           |           |           |           |           |           |           |           |

<sup>1</sup> \**p*<.05, \*\**p*<.01, \*\*\**p*<.001.

Finally, statistical analyses confirmed theoretical expectations of relationships between mindfulness and psychological flexibility dimensions. Small to moderate positive correlations (0.14–0.34, *p*<.001) were observed between mindfulness and both global psychological flexibility and all its sub-processes. Conversely, comparable negative associations were observed for global psychological inflexibility and five of its sub-processes (range -0.23– -0.30, *p*<.001). Experiential avoidance was the only exception, which did not show as significant association with trait mindfulness.

3.2.3. Concurrent Validity

Findings from the correlation analyses assessing concurrent validity are reported in Table 4. As expected, global psychological flexibility and its sub-processes were associated with depression, anxiety, and stress, with small to moderate correlation coefficients (range -0.09– -0.35, *p*<.05). However, although acceptance was negatively related to depression, anxiety and stress, only the correlation with depression reached significance. Additionally, global psychological flexibility and all its sub-processes were positively associated with physical, psychological, spiritual, relational, and

general well-being, with correlation coefficients ranging from small to moderate in magnitude (range 0.16–0.39,  $p < .001$ ).

In contrast, and consistent with expectations, global psychological inflexibility and its sub-processes showed positive associations with depression, anxiety, and stress, with correlation coefficients ranging from small to large (0.12–0.46,  $p < .001$ ). The sole exception was experiential avoidance, as it showed no significant association with depression and anxiety. Additionally, global psychological inflexibility and five of its sub-processes were negatively associated with all well-being dimensions, also evidencing correlation coefficients in the small to moderate range (-0.10– -0.38,  $p < .001$ ). The only exception was experiential avoidance, which displayed small positive correlations with physical, psychological, spiritual, and relational well-being (range -0.11– -0.13,  $p < .001$ ), and a non-significant correlation with general well-being.

### 3.3. Discussion

Factor analyses of the Italian MPFI-24 in an independent sample replicated the factor structure obtained in Study 1. Specifically, results demonstrated a very good fit for the first-order model, which included the twelve psychological flexibility and inflexibility sub-processes. Additionally, the second-order model, where global psychological flexibility and inflexibility served as two second-order latent variables with their corresponding six sub-processes as first-order latent variables, also showed a good fit.

The Italian MPFI-24 demonstrated strong convergent validity. The instrument displayed associations with other scales of psychological flexibility/inflexibility and with trait mindfulness in directions that were consistent with the ACT psychological flexibility framework. Concurrent validity was also supported, as psychological flexibility and inflexibility global and subscale scores showed associations with indicators of distress and well-being that were consistent with theoretical predictions. However, one notable exception was experiential avoidance which evidenced unexpected correlations in both convergent and concurrent validity analyses. The convergent validity analysis revealed that experiential avoidance was not significantly linked to the AAQ-II and trait mindfulness and exhibited a small positive correlation with the valued action subscale of the CompACT. Regarding concurrent validity, it was only positively related to stress (but not to depression and anxiety), and displayed negative associations with all well-being dimensions. Nevertheless, similar unexpected results regarding experiential avoidance have been observed in the Italian validation study of the parent MPFI [19], and validation studies of the MPFI-24 [18–20,41].

## 4. General Discussion

The present research was comprised of two studies designed to validate the Italian MPFI-24 by assessing its factor structure, reliability, validity, and measurement invariance using two general population samples. Factor analyses of the Italian MPFI-24 in both studies provided robust support for its first-order twelve factor structure and acceptable support for the two-factor hierarchical model. These findings align with previous factor analytic studies of the MPFI-24, which likewise identified that both a two-factor second-order model [11,22] and a twelve-factor first-order model [20,23] as the best fitting solution. Notably, in research evaluating both models, each model was reported to provide good or adequate fit [20,23].

These findings affirm that the factor structure of the Italian MPFI-24 is consistent with the ACT psychological flexibility framework. While the twelve sub-processes are interconnected, each one is distinctive and as such, they may not simply exist on a continuum but interact in more complex ways that influence therapeutic outcomes or research findings (e.g., [17,42,43]). Overall, the Italian MPFI-24 serves as a multidimensional measure consisting of twelve distinct scales organized into two higher-order dimensions, which offers a robust measurement instrument for assessing individual variations in psychological flexibility/inflexibility [18,43].

Results of Study 1 showed that the Italian MPFI-24 global psychological flexibility and inflexibility scales and their respective subscales displayed good internal consistency, evidenced by

reliability coefficients ranging from 0.71 to 0.92. These reliability coefficients are similar to those reported for the English MPFI-24 (0.75–0.92) [11]. Furthermore, the intercorrelations among the Italian MPFI-24 sub-scales showed moderate but not complete overlap, evidencing their interconnectedness and distinctiveness.

Study 1 results also supported the measurement invariance of the Italian MPFI-24 across gender, age, and mental health status, suggesting consistent performance of the instrument across these dimensions. These findings align with those reported in previous validation studies of the MPFI-24 [20,22] as well as validation studies of the parent MPFI [12,18,19]. This evidence indicates that the Italian MPFI-24 allows for reliable comparisons of latent means among groups differentiated by gender, age, and mental health status within the Italian context.

In terms of additional psychometric evidence from Study 2, the Italian MPFI-24 demonstrated convergent validity through small to large correlations between global psychological flexibility and inflexibility (as well as most of their sub-processes) and established measures of flexibility/inflexibility (i.e., AAQ-II and CompACT), as well as trait mindfulness (i.e., MAAS), which were aligned with theoretical expectations. These findings are consistent with those from validation studies of the parent MPFI [10] and the MPFI-24 [11,20,22,23]. Additionally, concurrent validity was evidenced by significant theoretically consistent relationships between the global psychological flexibility and inflexibility scales and most of their sub-processes with measures of distress and well-being. These results align with those from studies of the parent MPFI [10,19] and the MPFI-24 [20,22].

Interestingly, experiential avoidance evidenced unexpected associations with some MPFI-24 subscales and other measures in validity analyses. Contrary to the psychological flexibility framework, experiential avoidance showed no statistically significant associations with four psychological inflexibility sub-processes and exhibited small but significant positive correlations with three psychological flexibility sub-processes. In terms of convergent validity, contrary to expectations, experiential avoidance did not show significant correlations with the AAQ-II and trait mindfulness but exhibited a small positive correlation with the CompACT valued action subscale, which assesses a facet of psychological flexibility. Regarding concurrent validity, unexpectedly experiential avoidance did not show significant negative correlations with depression or anxiety, although it was negatively correlated with stress. Also unexpectedly, it manifested significant but weak positive correlations with some well-being dimensions (i.e., physical, psychological, spiritual, and relational).

These unexpected experiential avoidance findings are consistent with those from previous validation studies of the MPFI-24. Specifically, similar to our findings, the Spanish MPFI-24 validation study reported that experiential avoidance was only significantly related to some psychological inflexibility sub-processes, and was positively associated with one psychological flexibility sub-process [23]. Furthermore, as for convergent validity, experiential avoidance was not significantly associated with other measures of psychological flexibility/inflexibility in either the Spanish or French MPFI-24 validation studies [11,23]. Notably, the Spanish MPFI-24 study found an unexpected positive association between experiential avoidance and the AAQ-II [23]. Finally, our concurrent validity findings regarding experiential avoidance align with those studies that investigated the French and Spanish MPFI-24, which found that experiential avoidance was unrelated to measures of distress and well-being [11,23]. Several explanations have been proposed in the literature for the abovementioned pattern of associations between experiential avoidance and other MPFI assessed psychological flexibility/inflexibility sub-processes and standardized psychosocial outcome measures that are inconsistent with the ACT psychological flexibility framework. First, the wording of some MPFI experiential avoidance items, originally adapted from mindfulness-based scales (e.g., Philadelphia Mindfulness Scale; [44]), might not be sufficiently specific for capturing experiential avoidance as intended [11,18]. Second, translation challenges across languages (e.g., Italian, French, Spanish, Swedish) could obscure accurate interpretation of experiential avoidance items [11,18,23]. Third, experiential avoidance is likely to entail context-sensitive adaptiveness, especially during acute crises or major societal disruptions such as the

COVID-19 pandemic. In these contexts, temporary experiential avoidance can provide immediate emotional relief and short-term coping benefits [19,42,45]. Indeed, person-centered analyses have identified profiles wherein high experiential avoidance co-occurs with high psychological flexibility, highlighting nuanced response patterns overlooked in other variable-centered studies [17,42]. Finally, variability in how experiential avoidance relates to other theoretically relevant variables may reflect measurement limitations. For instance, the AAQ-II—commonly used to assess experiential avoidance—has been shown to overlap with psychological distress [15,46].

This study has several limitations. Participants were recruited through convenience sampling, resulting in samples biased toward female respondents, which restricts the generalizability of the findings. All data were collected via online self-report measures, increasing the potential for common method variance. Additionally, the cross-sectional design precluded evaluation of the test-retest reliability of the Italian MPFI-24 and its sensitivity to changes across time. Future studies should utilize longitudinal designs and recruit samples that better reflect the broader population. Additionally, although our studies included subgroups of participants who reported current mental health difficulties and/or receiving ongoing psychological or pharmacological treatment, future research should test the psychometric proprieties of the Italian MPFI-24 in populations with independently diagnosed mental disorders. Such studies would identify which psychological flexibility/inflexibility sub-processes are most closely associated with therapeutic outcomes in specific diagnostic groups and, more broadly, in relation to health and well-being.

## 5. Conclusions

Overall, the present findings support the reliability and validity of the Italian MPFI-24 for assessing global psychological flexibility and inflexibility and their corresponding sub-processes within the Italian context. Given its brevity, the MPFI-24 is especially suited to research and clinical contexts where assessment time is limited, offering substantial efficiency advantages compared to the original, longer parent MPFI. In research endeavors, the MPFI-24 could reduce participant burden, enhance retention rates, and facilitate large-scale projects, including daily diary studies or ecological momentary assessments. In clinical applications, its concise format is particularly suited to repeated, routine screenings for efficiently tracking of client progress without excessive demands on clients or clinicians.

**Supplementary Materials:** The following supporting information can be downloaded at the website of this paper posted on Preprints.org.

**Author Contributions:** G. L.: Conceptualization; Data curation; Formal analysis; Investigation; Methodology; Project administration; Writing - original draft; and Writing - review & editing. Z. B: Data curation; Writing - original draft; and Writing - review & editing. F. B.: Conceptualization; Data curation; Formal analysis; Writing - original draft; and Writing - review & editing. K. P.: Conceptualization; Investigation; Methodology; Project administration; Writing - original draft; and Writing - review & editing. F. C.: Conceptualization; Data curation; Formal analysis; Methodology; Writing - original draft; and Writing - review & editing. E. T.: Conceptualization; Project administration; Writing - original draft; and Writing - review & editing. S. G.: Funding acquisition; Project administration; Writing - original draft; and Writing - review & editing.

**Funding:** This study is conducted by the University of Bologna within the UNIST-HEALTH project, funded by the Italian Ministry of University and Research (MUR) through the PRO-BEN2 initiative (PROBEN2024\_0000004; CUP J53C2400469001).

**Institutional Review Board Statement:** The study was conducted in accordance with the Declaration of Helsinki and approved by the Institutional Review Board (or Ethics Committee) of University of Bologna (27/6/2023 clearance number: 0177753). Informed consent was obtained from all participants.

**Informed Consent Statement:** Informed consent was obtained from all subjects involved in the study.

**Data Availability Statement:** The data are available from the corresponding author upon reasonable request, subject to institutional approval and data protection regulations.

**Conflicts of Interest:** The authors of this study claim to have no conflict of interest.

## Reference

- Hayes SC, Luoma JB, Bond FW, Masuda A, Lillis J. Acceptance and commitment therapy: Model, processes and outcomes. *Behav Res Ther.* 2006;44:1–25. <https://doi.org/10.1016/j.brat.2005.06.006>.
- Hayes SC, Strosahl KD, Wilson KG. *Acceptance and commitment therapy: The process and practice of mindful change*, 2nd ed. New York, NY, US: Guilford Press; 2012.
- Gloster AT, Meyer AH, Lieb R. Psychological flexibility as a malleable public health target: Evidence from a representative sample. *J Context Behav Sci.* 2017;6:166–71. <https://doi.org/10.1016/j.jcbs.2017.02.003>.
- McCracken LM, Gutiérrez-Martínez O. Processes of change in psychological flexibility in an interdisciplinary group-based treatment for chronic pain based on Acceptance and Commitment Therapy. *Behav Res Ther.* 2011;49:267–74. <https://doi.org/10.1016/j.brat.2011.02.004>.
- Young T, Pakenham KI, Chapman CM, Edwards MR. Predictors of mental health in aid workers: Meaning, resilience, and psychological flexibility as personal resources for increased well-being and reduced distress. *Disasters.* 2022;46:974–1006. <https://doi.org/10.1111/disa.12517>.
- Levin ME, MacLane C, Daflos S, Seeley JR, Hayes SC, Biglan A, et al. Examining psychological inflexibility as a transdiagnostic process across psychological disorders. *J Context Behav Sci.* 2014;3:155–63. <https://doi.org/10.1016/j.jcbs.2014.06.003>.
- Ong CW, Barthel AL, Hofmann SG. The relationship between psychological inflexibility and well-being in adults: A meta-analysis of the Acceptance and Action Questionnaire. *Behav Ther.* 2024;55:26–41. <https://doi.org/10.1016/j.beth.2023.05.007>.
- Gloster AT, Walder N, Levin ME, Twohig MP, Karekla M. The empirical status of acceptance and commitment therapy: A review of meta-analyses. *J Context Behav Sci.* 2020;18:181–92. <https://doi.org/10.1016/j.jcbs.2020.09.009>.
- Stockton D, Kellett S, Berrios R, Sirois F, Wilkinson N, Miles G. Identifying the underlying mechanisms of change during Acceptance and Commitment Therapy (ACT): A systematic review of contemporary mediation studies. *Behav Cogn Psychother.* 2019;47:332–62. <https://doi.org/10.1017/S1352465818000553>.
- Rolfs JL, Rogge RD, Wilson KG. Disentangling components of flexibility via the Hexaflex Model: Development and validation of the Multidimensional Psychological Flexibility Inventory (MPFI). *Assessment.* 2018;25:458–82. <https://doi.org/10.1177/1073191116645905>.
- Grégoire S, Gagnon J, Lachance L, Shankland R, Dionne F, Kotsou I, et al. Validation of the english and french versions of the Multidimensional Psychological Flexibility Inventory short form (MPFI-24). *J Context Behav Sci.* 2020;18:99–110. <https://doi.org/10.1016/j.jcbs.2020.06.004>.
- Lin Y-Y, Rogge RD, Swanson DP. Cross-cultural flexibility: Validation of the traditional Mandarin, simplified Mandarin, and Japanese translations of the Multidimensional Psychological Flexibility Inventory. *J Context Behav Sci.* 2020;15:73–84. <https://doi.org/10.1016/j.jcbs.2019.11.008>.
- Seidler D, Stone B, Clark BE, Koran J, Drake CE. Evaluating the factor structure of the Multidimensional Psychological Flexibility Inventory: An independent replication and extension. *J Context Behav Sci.* 2020;17:23–31. <https://doi.org/10.1016/j.jcbs.2020.04.007>.
- Bond FW, Hayes SC, Baer RA, Carpenter KM, Guenole N, Orcutt HK, et al. Preliminary psychometric properties of the Acceptance and Action Questionnaire–II: A revised measure of psychological inflexibility and experiential avoidance. *Behav Ther.* 2011;42:676–88. <https://doi.org/10.1016/j.beth.2011.03.007>.
- Landi G, Pakenham KI, Crocetti E, Grandi S, Tossani E. The Multidimensional Psychological Flexibility Inventory (MPFI): Discriminant validity of psychological flexibility with distress. *J Context Behav Sci.* 2021;21:22–9. <https://doi.org/10.1016/j.jcbs.2021.05.004>.
- Rogge RD, Daks JS, Dubler BA, Saint KJ. It's all about the process: Examining the convergent validity, conceptual coverage, unique predictive validity, and clinical utility of ACT process measures. *J Context Behav Sci.* 2019;14:90–102. <https://doi.org/10.1016/j.jcbs.2019.10.001>.

17. Stabbe OK, Rolffs JL, Rogge RD. Flexibly and/or inflexibly embracing life: Identifying fundamental approaches to life with latent profile analyses on the dimensions of the Hexaflex model. *J Context Behav Sci.* 2019;12:106–18. <https://doi.org/10.1016/j.jcbs.2019.03.003>.
18. Tabrizi FF, Larsson AB, Grönvall H, Söderstrand L, Hallén E, Champoux-Larsson M-F, et al. Psychometric evaluation of the Swedish Multidimensional Psychological Flexibility Inventory (MPFI). *Cogn Behav Ther.* 2023; 52:295–316. <https://doi.org/10.1080/16506073.2022.2153077>.
19. Landi G, Pakenham KI, Giovannetti AM, Presti G, Boccolini G, Cola A, et al. Italian validation of the Italian Multidimensional Psychological Flexibility Inventory (MPFI). *J Context Behav Sci.* 2021;21:57–65. <https://doi.org/10.1016/j.jcbs.2021.05.007>.
20. Hekmati I, Abdollahpour Ranjbar H, Ciarrochi J, Laghaei M, Rezaei Golezani H, Eskin M. Psychometric properties and measurement invariance of the Multidimensional Psychological Flexibility Inventory-Persian (MPFI-P): An extensive investigation of long and short versions in community and clinical samples. *J Context Behav Sci.* 2024;31:100717. <https://doi.org/10.1016/j.jcbs.2023.100717>.
21. Edwards P, Roberts I, Sandercock P, Frost C. Follow-up by mail in clinical trials: Does questionnaire length matter? *Control Clin Trials.* 2004;25:31–52. <https://doi.org/10.1016/j.cct.2003.08.013>.
22. Fang S, Huang M, Ding D, Zheng Q. The Chinese version of the Multidimensional Psychological Flexibility Inventory short form (MPFI-24): Assessment of psychometric properties using classical test theory and network analysis. *J Context Behav Sci.* 2024;33:100805. <https://doi.org/10.1016/j.jcbs.2024.100805>.
23. Barrado-Moreno V, Esteve R, López-Martínez AE, Ramírez-Maestre C. Measuring psychological flexibility and inflexibility: Further psychometric evidence of the Multidimensional Psychological Flexibility Inventory short form (MPFI-24) in Spanish population. *Curr Psychol.* 2025;44:1001–15. <https://doi.org/10.1007/s12144-025-07421-x>.
24. Brown TA. *Confirmatory Factor Analysis for Applied Research*, Second Edition. Guilford Publications; 2015.
25. Hu L, Bentler PM. Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Struct Equ Model Multidiscip J.* 1999. <https://doi.org/10.1080/10705519909540118>.
26. Cai L, Monroe S. A New Statistic for Evaluating Item Response Theory Models for Ordinal Data. CRESST Report 839. National Center for Research on Evaluation, Standards, and Student Testing (CRESST); 2014.
27. Ellis PD. *The Essential Guide to Effect Sizes: Statistical Power, Meta-Analysis, and the Interpretation of Research Results*. Cambridge University Press; 2010.
28. Millsap RE. *Statistical Approaches to Measurement Invariance*. Routledge; 2012.
29. Kimber M, Rehm J, Ferro MA. Measurement Invariance of the WHODAS 2.0 in a population-based sample of youth. *PLoS ONE.* 2015;10:e0142385. <https://doi.org/10.1371/journal.pone.0142385>.
30. Kim ES, Cao C, Wang Y, Nguyen DT. Measurement invariance testing with many groups: A comparison of five approaches. *Struct Equ Model Multidiscip J.* 2017;24:524–44. <https://doi.org/10.1080/10705511.2017.1304822>.
31. Rutkowski L, Svetina D. Measurement invariance in international surveys: Categorical indicators and fit measure performance. *Appl Meas Educ.* 2017;30:39–51. <https://doi.org/10.1080/08957347.2016.1243540>.
32. Swami V, Tran US, Stieger S, Aavik T, Ranjbar HA, Adebayo SO, et al. Body appreciation around the world: Measurement invariance of the Body Appreciation Scale-2 (BAS-2) across 65 nations, 40 languages, gender identities, and age. *Body Image.* 2023;46:449–66. <https://doi.org/10.1016/j.bodyim.2023.07.010>.
33. Pennato T, Berrocal C, Bernini O, Rivas T. Italian version of the acceptance and action questionnaire-II (AAQ-II): Dimensionality, reliability, convergent and criterion validity. *J Psychopathol Behav Assess.* 2013;35:552–63. <https://doi.org/10.1007/s10862-013-9355-4>.
34. Francis AW, Dawson DL, Golijani-Moghaddam N. The development and validation of the Comprehensive assessment of Acceptance and Commitment Therapy processes (CompACT). *J Context Behav Sci.* 2016;5:134–45. <https://doi.org/10.1016/j.jcbs.2016.05.003>.
35. Giovannetti AM, Pöttgen J, Anglada E, Menéndez R, Hoyer J, Giordano A, et al. Cross-Country adaptation of a psychological flexibility measure: The Comprehensive Assessment of Acceptance and Commitment Therapy Processes. *Int J Environ Res Public Health.* 2022;19:3150. <https://doi.org/10.3390/ijerph19063150>.

36. Brown KW, Ryan RM. The benefits of being present: Mindfulness and its role in psychological well-being. *J Pers Soc Psychol.* 2003;84:822–48. <https://doi.org/10.1037/0022-3514.84.4.822>.
37. Veneziani CA, Voci A. The Italian adaptation of the Mindful Awareness Attention Scale and its relation with individual differences and quality of life indexes. *Mindfulness.* 2015;6:373–81. <https://doi.org/10.1007/s12671-013-0270-2>.
38. Lovibond S, Lovibond P. *Manual for the Depression Anxiety Stress Scales (DASS).* (2nd ed.). 1995.
39. Bottesi G, Ghisi M, Altoè G, Conforti E, Melli G, Sica C. The Italian version of the Depression Anxiety Stress Scales-21: Factor structure and psychometric properties on community and clinical samples. *Compr Psychiatry.* 2015;60:170–81. <https://doi.org/10.1016/j.comppsy.2015.04.005>.
40. Bonacchi A, Chiesi F, Lau C, Marunic G, Saklofske DH, Marra F, et al. Rapid and sound assessment of well-being within a multi-dimensional approach: The Well-being Numerical Rating Scales (WB-NRSs). *PLOS ONE.* 2021;16:e0252709. <https://doi.org/10.1371/journal.pone.0252709>.
41. Sundström FT, Lavefjord A, Buhrman M, McCracken LM. Assessing Psychological Flexibility and Inflexibility in Chronic Pain Using the Multidimensional Psychological Flexibility Inventory (MPFI). *J Pain.* 2023;24:770–81. <https://doi.org/10.1016/j.jpain.2022.11.010>.
42. Pakenham KI, Landi G, Cattivelli R, Grandi S, Tossani E. Identification of psychological flexibility and inflexibility profiles during the COVID-19 pandemic. *J Clin Psychol.* 2023. <https://doi.org/10.1002/jclp.23536>.
43. Rogge RD, Lin Y-Y. Multidimensional Psychological Flexibility Inventory (MPFI). In: *Handbook of Assessment in Mindfulness Research.* Springer, Cham; 2024. p. 1–18. [https://doi.org/10.1007/978-3-030-77644-2\\_114-1](https://doi.org/10.1007/978-3-030-77644-2_114-1).
44. Cardaciotto L, Herbert JD, Forman EM, Moitra E, Farrow V. The Assessment of present-moment awareness and acceptance: The Philadelphia Mindfulness Scale. *Assessment.* 2008;15:204–23. <https://doi.org/10.1177/1073191107311467>.
45. Pakenham KI, Landi G, Boccolini G, Furlani A, Grandi S, Tossani E. The moderating roles of psychological flexibility and inflexibility on the mental health impacts of COVID-19 pandemic and lockdown in Italy. *J Context Behav Sci.* 2020;17:109–18. <https://doi.org/10.1016/j.jcbs.2020.07.003>.
46. Doorley JD, Goodman FR, Kelso KC, Kashdan TB. Psychological flexibility: What we know, what we do not know, and what we think we know. *Soc Personal Psychol Compass.* 2020;14:e12566. <https://doi.org/10.1111/spc3.12566>.

**Disclaimer/Publisher's Note:** The statements, opinions and data contained in all publications are solely those of the individual author(s) and contributor(s) and not of MDPI and/or the editor(s). MDPI and/or the editor(s) disclaim responsibility for any injury to people or property resulting from any ideas, methods, instructions or products referred to in the content.