

The Mini Z Worklife and Burnout Reduction Instrument: Psychometrics and Clinical Implications



J Gen Intern Med 37(11):2876–8
DOI: 10.1007/s11606-021-07278-3
© The Author(s) under exclusive licence to Society of General Internal Medicine 2021

INTRODUCTION

Stress and burnout among healthcare workers are at alarming levels.¹ The Mini Z (Zero Burnout Program) worklife measure for clinicians was derived from validated instruments with the factor structure published in *JGIM* in 2016.² The 1.0 version included 4 work conditions (work ambience (chaos), work control, teamwork effectiveness, and values alignment), 3 clinician reactions (stress, satisfaction, and burnout), and 3 items related to electronic medical record (EMR) stress (time pressure, home EMR time, and EMR proficiency). This paper investigates the psychometric structure of the 2.0 version which (1) changes EMR proficiency to EMR frustration, (2) aligns positive scores for calculation of a summary (joy) score, and (3) has two 5-item subscales (supportive work environment and work pace/EMR stress). Mini Zs have been adapted for residents, nurses, and administrators, and administered to thousands of healthcare workers in multiple languages across 5 continents. Concurrent validity of the burnout item was assessed with the Maslach Burnout Inventory (MBI) emotional exhaustion (EE) subscale.³ A subsequent study assessed convergent validity of the remaining items against EE and depersonalization MBI subscales.⁴ To provide a brief, valid measure for healthcare organizations to address clinician satisfaction and burnout, we determined the reliability and validity of the Mini Z 2.0's two-subscale structure.

METHODS

A convenience sample of 7675 respondents (67% physicians, 59% female, and 72% white, in 80 organizations from 23 states) was assembled for the analysis from the American Medical Association burnout assessment program. Cronbach's alpha and McDonald's Omega coefficients assessed internal consistency (values > 0.7 acceptable to good for group-level measurement, as in PROMIS Measurement

Standards, 2013). An inter-correlation matrix assessed item correlations. Confirmatory factor analysis models were constructed for the Mini Z 2.0 (5 items in each subscale), with confirmatory analysis examining significance of the loadings, as well as modification indices in a revised version with different subscale configurations based upon optimal factor scores and an overall unidimensional composite. For model fit, assessed using the comparative fit index (CFI), Tucker-Lewis index (TLI), standardized root mean residual (SRMR), and root mean square error of approximation (RMSEA), cut values⁵ indicating good fit included CFI and TLI > 0.95, SRMR < 0.05, and RMSEA < 0.08. Latent structural regression models assessed convergent validity of the new factors in relation to the PHQ2 depression index, and two items of self-rated home EMR use.

RESULTS

Table 1 demonstrates internal consistency and confirmatory factor analysis loadings for the two 5-item factor structure (alphas 0.75–0.83, omegas 0.82–0.86). In models 1 and 2, “supportive work environment” includes satisfaction, burnout, values alignment, teamwork, and work control, while “work pace/EMR stress” includes stress, chaos, home EMR, documentation time pressure, and EMR frustration; a bifactor analysis demonstrated good performance as either two domains or a 10 item measure. A subsequent confirmatory analysis (models 3 and 4) with a 7-item subscale (the original 5 items plus stress and chaos), and 3 EMR items (Fig. 1), had better fit indices (improved CFI, TLI, RMSR, and RMSEA) and reasonable performance of a bifactor model. A general factor model (model 5) showed good performance as a 10-item single domain. An inter-correlation matrix demonstrated good correlations ($r > 0.3$) between 80% of items ($ps < 0.001$). Convergent validity determinations (supplemental figures) confirmed a two-subscale structure, with better model fit for the 7- and 3-item structure versus the 5 and 5. The PHQ2 depression questions correlated with the supportive work environment factor, but not the EMR subscale.

DISCUSSION

In a 10-question instrument, the Mini Z provides information on satisfaction, burnout, and remediable work conditions. Due to the clinical utility of this parsimonious

Received July 19, 2021

Accepted November 10, 2021

Published online January 19, 2022

Table 1 Standardized Confirmatory Factor Analysis (CFA) Loadings for the MINI Z

Items	Original model			Revised model			
	Model 1	Model 2	Bifactor	Model 3	Model 4	Model 5	General factor
Satisfaction	0.808		0.677	0.806		0.668	0.784
Burnout	0.848		0.826	0.831		0.826	0.810
Values	0.718		0.555	0.720		0.545	0.695
Teamwork	0.655		0.543	0.658		0.536	0.632
Control	0.716		0.722	0.717		0.724	0.689
Stress		0.822	0.815	0.772		0.806	0.751
Chaos		0.611	0.639	0.605		0.630	0.581
EMR time pressure		0.791	0.593		0.953	0.591	0.742
Home EMR time		0.684	0.434		0.758	0.430	0.647
EMR frustration		0.538	0.387		0.629	0.386	0.504
Model fit							
CFI	0.863		0.982	0.954		0.982	0.841
TLI	0.819		0.968	0.939		0.967	0.795
RMSEA	0.190		0.080	0.110		0.081	0.202
SRMR	0.074		0.022	0.040		0.022	0.083
Cronbach alpha	0.83	0.75	0.85	0.85	0.78	0.85	0.85
Omega	0.86	0.82	0.86	0.90	0.83	0.86	0.90
Reliability attrition	3.5%	8.5%		5.5%	6.0%		5.5%

Note: Only single domain estimates are provided for bifactor models (sub-domains are not reported). The following values indicate good model fit⁵: CFI and TLI > 0.95, SRMR < 0.05, and RMSEA < 0.08. The bifactor model indicates a single general factor with sub-domains; the general factor model indicates a single overall domain CFI comparative fit index, TFI Tucker-Lewis index, SRMR standardized root mean residual, RMSEA root mean square error of approximation, EMR electronic medical record

worklife measure,⁶ its use has expanded rapidly. In this analysis, we confirm a two domain structure, with a satisfactory unidimensional composite. Thus, organizations can portray an overall “joy score” and use the two original subscales which have good internal consistency. We have also determined that a different configuration of subscale

items (now called the Mini Z 3.0) has better performance, with a 7-item subscale of work conditions and clinician reactions, and a 3-item EMR-related subscale. One limitation is that no independent measure of home EMR use was available; another is that the Mini Z 3.0 will need validation against the MBI.

Mini Z survey 2.0

1. Overall, I am satisfied with my current job:
5=Agree strongly 4=Agree 3=Neither agree nor disagree 2=Disagree 1=Strongly disagree

2. Using your own definition of “burnout”, please choose one of the numbers below:
5=I enjoy my work. I have no symptoms of burnout.
4=I am under stress, and don’t always have as much energy as I did, but I don’t feel burned out.
3=I am beginning to burn out and have one or more symptoms of burnout, e.g. emotional exhaustion.
2=The symptoms of burnout that I’m experiencing won’t go away. I think about work frustrations a lot.*
1=I feel completely burned out. I am at the point where I may need to seek help.*
*If you select 1 or 2, please consider seeking assistance – call your insurance provider or employee assistance plan (EAP)

3. My professional values are well aligned with those of my clinical leaders:
5=Agree strongly 4=Agree 3=Neither agree nor disagree 2=Disagree 1=Strongly disagree

4. The degree to which my care team works efficiently together is:
1=Poor 2=Marginal 3=Satisfactory 4=Good 5=Optimal

5. My control over my workload is:
1= Poor 2= Marginal 3= Satisfactory 4= Good 5= Optimal

6. I feel a great deal of stress because of my job:
1=Agree strongly 2=Agree 3=Neither agree nor disagree 4=Disagree 5=Strongly disagree

7. Sufficiency of time for documentation is:
1= Poor 2= Marginal 3= Satisfactory 4= Good 5= Optimal

8. The amount of time I spend on the electronic medical record (EMR) at home is:
1=Excessive 2=Moderately high 3=Satisfactory 4=Modest 5=Minimal/none

9. The EMR adds to the frustration of my day:
1=Agree strongly 2=Agree 3=Neither agree nor disagree 4=Disagree 5=Strongly disagree

10. Which number best describes the atmosphere in your primary work area?
Calm 5 4 3 2 1
Busy, but reasonable Hectic, chaotic

11. Tell us more about your stresses and what we can do to minimize them:

Total Score
Scoring your Mini Z: add the numbered responses from questions 1-10. Range 10-50 (>= 40 is a joyful workplace).

Subscale 1 (supportive work environment) = add the numbered responses to questions 1-5. Range 5-25 (>= 20 is a highly supportive practice!).

Subscale 2 (work pace and EMR stress) = add the numbered responses to questions 6-10. Range 5-25 (>= 20 is an office with reasonable pace and manageable EMR stress!).

Mini Z survey 3.0

1. Overall, I am satisfied with my current job:
5=Agree strongly 4=Agree 3=Neither agree nor disagree 2=Disagree 1=Strongly disagree

2. Using your own definition of “burnout”, please choose one of the numbers below:
5=I enjoy my work. I have no symptoms of burnout.
4=I am under stress, and don’t always have as much energy as I did, but I don’t feel burned out.
3=I am beginning to burn out and have one or more symptoms of burnout, e.g. emotional exhaustion.
2=The symptoms of burnout that I’m experiencing won’t go away. I think about work frustrations a lot.*
1=I feel completely burned out. I am at the point where I may need to seek help.*
*If you select 1 or 2, please consider seeking assistance – call your insurance provider or employee assistance plan (EAP)

3. My professional values are well aligned with those of my clinical leaders:
5=Agree strongly 4=Agree 3=Neither agree nor disagree 2=Disagree 1=Strongly disagree

4. The degree to which my care team works efficiently together is:
1=Poor 2=Marginal 3=Satisfactory 4=Good 5=Optimal

5. My control over my workload is:
1= Poor 2= Marginal 3= Satisfactory 4= Good 5= Optimal

6. I feel a great deal of stress because of my job:
1=Agree strongly 2=Agree 3=Neither agree nor disagree 4=Disagree 5=Strongly disagree

7. Which number best describes the atmosphere in your primary work area?
Calm 5 4 3 2 1
Busy, but reasonable Hectic, chaotic

8. Sufficiency of time for documentation is:
1= Poor 2= Marginal 3= Satisfactory 4= Good 5= Optimal

9. The amount of time I spend on the electronic medical record (EMR) at home is:
1=Excessive 2=Moderately high 3=Satisfactory 4=Modest 5=Minimal/none

10. The EMR adds to the frustration of my day:
1=Agree strongly 2=Agree 3=Neither agree nor disagree 4=Disagree 5=Strongly disagree

11. Tell us more about your stresses and what we can do to minimize them:

Total Score
Scoring your Mini Z 3.0: add the numbered responses from questions 1-10. Range 10-50 (>= 40 is a joyful workplace).

Subscale 1 (supportive work environment) = add the numbered responses to questions 1-7. Range 7-35 (>= 28 is a highly supportive workplace!).

Subscale 2 (EMR stress) = add the numbered responses to questions 8-10. Range 3-15 (>= 12 is a workplace with manageable EMR stress!).

The Mini Z was developed by Dr. Mark Linzer and team at Hennepin Healthcare, Minneapolis MN. The mini Z survey tools can be used for research, program evaluation and education capacities without restriction. Permission for commercial or revenue-generating applications of the mini Z must be obtained from Mark Linzer, MD or the Hennepin Healthcare Institute for Professional Work® prior to use: www.professionalswork®.com. Questions drawn mainly from the Physician Work® Study, MEMO Study, and Healthy Workplace study.

The Mini Z was developed by Dr. Mark Linzer and team at Hennepin Healthcare, Minneapolis MN. The mini Z survey tools can be used for research, program evaluation and education capacities without restriction. Permission for commercial or revenue-generating applications of the mini Z must be obtained from Mark Linzer, MD or the Hennepin Healthcare Institute for Professional Work® prior to use: www.professionalswork®.com. Questions drawn mainly from the Physician Work® Study, MEMO Study, and Healthy Workplace study.

Figure 1. Mini Z items: original 2.0 factor structure (5 and 5-item subscales) vs new 3.0-factor structure (7 and 3 items)

Supplementary Information The online version contains supplementary material available at <https://doi.org/10.1007/s11606-021-07278-3>.

Acknowledgements: This work was supported through the AMA.

Mark Linzer, MD¹
 Colleen McLoughlin, MPH²
 Sara Poplau, BA¹
 Elizabeth Goelz, MD¹
 Roger Brown, PhD³
 Christine Sinsky, MD²

¹Department of Medicine and Institute for Professional Worklife, Hennepin Healthcare System, 701 Park Avenue (G5), Minneapolis, MN 55415, USA
²American Medical Association, Chicago, IL, USA
³University of Wisconsin School of Nursing, Madison, WI, USA

Corresponding Author: Mark Linzer, MD; Department of Medicine and Institute for Professional Worklife, Hennepin Healthcare System, 701 Park Avenue (G5), Minneapolis, MN 55415, USA (e-mail: mark.linzer@hcmcd.org).

Declarations:

Conflict of Interest: Dr. Linzer reports support through Hennepin Healthcare for training wellness champions and burnout reduction studies from the AMA, ACP, IHI, Optum Office for Provider Advancement, and the ABIM Foundation. He is supported for burden of treatment and shared decision-making studies through NIH, co-leads a

program in Learning Health Systems for AHRQ, and consults on a grant for Harvard University in diagnostic accuracy and work conditions. Ms. Poplau is supported by the AMA for this work through Hennepin Healthcare Research Institute. Dr. Goelz is supported through Hennepin Healthcare by IHI and the AMA, and Dr. Brown was paid for time on this project by the AMA. Dr. Sinsky is employed by the American Medical Association. The opinions expressed in this article are those of the authors and should not be interpreted as American Medical Association policy.

REFERENCES

1. Prasad K, McLoughlin C, Stillman M, et al. Prevalence and correlates of stress and burnout among U.S. healthcare workers during the COVID-19 pandemic: A national cross-sectional survey study. *EclinicalMedicine*. 2021;35:100879. Published 2021 May 16. <https://doi.org/10.1016/j.eclinm.2021.100879>
2. Linzer M, Poplau S, Babbott S, et al. Worklife and Wellness in Academic General Internal Medicine: Results from a National Survey. *J Gen Intern Med*. 2016;31:1004–1010. <https://doi.org/10.1007/s11606-016-3720-4>
3. Rohland BM, Kruse GR, Rohrer JE. Validation of a single-item measure of burnout against the Maslach Burnout Inventory among physicians. *Stress Health*. 2004;20:75–79.
4. Olson K, Sinsky C, Rinne ST, et al. Cross-sectional survey of workplace stressors associated with physician burnout measured by the Mini-Z and the Maslach Burnout Inventory. *Stress Health*. 2019; 35:157–175. <https://doi.org/10.1002/smi.2849>
5. Hu LT and Bentler PM. Cutoff criteria for fit indexes in Covariance Structure Analysis: Conventional criteria versus new alternatives. *Struct Equ Model*. 1999;6(1):1–55.
6. Lee JS, Karliner LS, Julian KA, Linzer M, Feldman MD. Change in faculty perceptions of burnout and work life in and academic general medicine clinic: a pre-post study. *J Gen Intern Med*. 2019;34(10):1973–1974.

Publisher's Note: Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.