

Enhancing mental toughness among healthcare leaders to support employee engagement

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Executive Summary

This article addresses whether participation in a structured mental toughness (MT) intervention is associated with improved employee engagement among senior healthcare leaders operating under persistent high-pressure conditions. The authors — Cavan and Stamatis — argue that MT represents a developable psychological resource that may complement traditional wellbeing and leadership development initiatives by strengthening leaders' capacity for attention, emotion, and behavior regulation under stress. The study enrolled 12 senior leaders from University of Louisville Health in a six-session, bi-weekly group intervention. Mental toughness was measured using the Mental Toughness Index (MTI) and engagement using the Employee Engagement Scale (EES) at each session. Key findings include an approximately 3-point increase in total engagement across sessions (standardized $\beta \approx +0.12$ per session), a positive dose-response pattern whereby each additional prior session attended was associated with roughly +1.3 points higher within-person engagement change, and the strongest subscale improvement in behavioral engagement. The authors conclude that MT interventions may offer a scalable complement to stress-reduction approaches, while explicitly framing findings as exploratory and hypothesis-generating given the pilot design, small sample, and absence of a control group.

Key Insights

1. Employee engagement increased by approximately 3 points across the 6-session intervention among senior healthcare leaders, with behavioral engagement showing the clearest and most statistically consistent improvement ($\beta = +0.14$ per session, $p = 0.049$ before correction).
2. A positive dose-response pattern was observed: each additional prior session attended was associated with approximately +1.3 points higher within-person engagement change from baseline, and this signal was consistent across multiple robustness checks including leave-one-out, cluster bootstrap, Bayesian hierarchical modeling, and IP-weighted marginal structural modeling.
3. Recency and continuity of attendance appeared especially consequential — attending the immediately prior session was associated with an additional +1.60 points in engagement at the next session, and a recency-weighted dose index showed larger effects than simple attendance counts, suggesting MT skill development may require reinforcement rather than isolated exposure.

Practical Takeaways

- Organizations examining MT-based interventions for healthcare leaders can observe from this pilot that a structured, manualized, multi-session group format — covering self-efficacy, emotion regulation, attention regulation, adversity appraisal, and success mindset — was associated with within-person

engagement gains, with consistent back-to-back attendance linked to the largest improvements.

- The dose-response pattern observed across multiple analytic approaches suggests that program designs emphasizing continuity and cumulative exposure may produce different outcomes than single-session or infrequent-contact formats, a consideration relevant to program structuring decisions in leadership development contexts.

Frameworks Mentioned

Mental Toughness Index (MTI) — An 8-item, 1–7 scale instrument developed by Gucciardi to measure mental toughness as a unidimensional construct encompassing composure, recovery, and clarity under pressure; used here at every session to assess MT as both an outcome and a potential mechanism.

Employee Engagement Scale (EES) — A 12-item, 5-point Likert scale developed by Shuck et al. (2017) assessing cognitive, emotional, and behavioral engagement as a multidimensional construct reflecting the intensity, direction, and maintenance of employees' cognitive, emotional, and behavioral energies at work.

Critical Analysis

Strengths: The study employs an extensive robustness portfolio (leave-one-out, cluster bootstrap with 2,000 resamples, permutation tests, Bayesian hierarchical modeling with skeptical priors, IP-weighted marginal structural models, Huber M-estimation, and LOCF sensitivity), which is methodologically sophisticated relative to the sample size and adds credibility to the directional dose signal. Preregistered research questions, IRB approval, within-person fixed-effects modeling to control for stable individual differences, and transparent reporting of missingness and internal consistency statistics across sessions are also notable strengths. **Limitations** are substantial: N=12 with ~36% missing engagement data post-baseline yields very limited statistical power; the absence of a control group means observed engagement increases cannot be attributed to the intervention versus time effects, organizational events, or the non-specific effects of group participation (peer interaction, psychological safety, organizational visibility); self-reported outcomes without blinded assessment and a single pre-intervention baseline preclude trend analysis; purposive sampling from a single institution (UofL Health) restricts generalizability; and the study cannot disentangle intervention content from cohort-format effects. The lagged MT-to-engagement mechanism analysis used only 16 observable transitions, rendering it underpowered. The authors disclose use of generative AI (ChatGPT versions 5, 5.1, and 5.2) for manuscript revision, which introduces a potential clarity-versus-accuracy trade-off. **Potential bias:** leaders who remained in the program may have been more motivated or organizationally supported, and the positive framing throughout — while appropriately caveated — risks over-interpretation of preliminary findings.

Organizational Practice

University of Louisville Health enrolled 12 senior healthcare leaders (directors and senior directors across departments including Operations, Communications, Patient Access, Quality, and Finance) in a six-session, bi-weekly, 2-hour group MT intervention. Sessions were facilitated by a single facilitator using standardized didactic instruction, guided reflection, and applied skill practice. Attendance was logged per session and used as a dose metric. Surveys were administered at each session in paper or Qualtrics format. No compensation was provided and no Protected Health Information was used.

Strategic Implications

The observed dose-response pattern, if replicated in larger controlled studies, would position MT skill training as a potential complement to structural burnout-reduction initiatives in healthcare, particularly given the article's framing of engagement as malleable and trainable rather than fixed. The emphasis on continuity and recency of attendance as drivers of engagement gains has implications for how multi-session leadership development programs are designed and scheduled. The pilot also illustrates a growing intersection between applied sport psychology constructs (mental toughness) and organizational leadership development, suggesting cross-disciplinary frameworks may increasingly appear in healthcare PMS and wellbeing program design. The authors' explicit acknowledgment of cohort-format effects (peer interaction, psychological safety) as potentially independent mechanisms points to unresolved questions about which components of group-based leadership interventions drive engagement outcomes — a distinction relevant for program evaluation and investment decisions.

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