

Algorithmic Differentiation of Parenting Phenotypes: Clustering Parental Burnout, Psychological Flexibility, and Their Effects on Child Effortful Control


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1. Round 1

1.1. Reviewer 1

Reviewer:

The construct of parental burnout is generally well described, with appropriate emphasis on exhaustion, emotional distancing, and the contrast with the parent's previous self; nonetheless, the boundaries between parental burnout and adjacent constructs (e.g., depressive symptoms, chronic stress, job burnout) remain somewhat blurred. For conceptual clarity and construct validity, the manuscript should more explicitly differentiate these constructs, ideally by discussing symptom patterns, etiological pathways, and contextual specificity. Doing so would justify the decision to focus on parental burnout in the clustering procedure and prevent conceptual overlap that might complicate interpretation of the identified profiles.

The title and framing around "Algorithmic Differentiation" and "Clustering Parental Burnout, Psychological Flexibility" create expectations of methodological innovation, yet the nature of this innovation is not clearly articulated in the introductory sections. To align expectations and strengthen the methodological contribution, the authors should explicitly state whether they are using a particular unsupervised machine-learning algorithm, latent profile analysis, or another person-centered approach, and why this is preferable to traditional variable-centered techniques. Clarifying what is novel—e.g., the combination of

variables, the algorithmic approach, or the focus on Iranian parents—will help situate the study within the broader methodological landscape.

Response: Revised and uploaded the manuscript.

1.2. Reviewer 2

Reviewer:

Although the manuscript effectively highlights the deleterious consequences of parental burnout and psychological control for children's internalizing and externalizing problems, the theoretical integration of child effortful control is currently underdeveloped. Given that effortful control is a central child outcome in the study, it should be clearly defined (e.g., in terms of attentional control, inhibitory control, and activation control) and explicitly anchored in developmental self-regulation frameworks. A more elaborated theoretical account of how parental burnout and parental psychological flexibility might shape effortful control—through modeling, emotion socialization, or parenting practices—would considerably strengthen the rationale for including this construct and for examining parent-child clusters.

The discussion of psychological control and autonomy support is compelling and draws on relevant empirical evidence, yet the underlying theoretical scaffolding could be made more explicit. Integrating formal theoretical frameworks such as self-determination theory, family systems theory, or stress-coping models would provide a more robust conceptual foundation for hypothesizing distinct "parenting phenotypes." For instance, explicating how thwarting versus supporting basic psychological needs may underpin the emergence of certain parent clusters could help readers understand why particular combinations of burnout, flexibility, and control are expected to co-occur.

The manuscript cites diverse studies across multiple cultural contexts, which is a strength, but the specific implications for the Iranian context remain somewhat implicit. Given that parenting norms, autonomy support, and psychological control can be strongly shaped by cultural values (e.g., collectivism, interdependence, respect for authority), the authors should more directly address how these contextual factors might moderate the prevalence or expression of parental burnout and related behaviors. A short but explicit section on cultural considerations—possibly contrasting Iranian norms with those from Western samples that dominate the literature—would enhance the cross-cultural validity and interpretability of the findings.

Response: Revised and uploaded the manuscript.

2. Revised

Editor's decision after revisions: Accepted.

Editor in Chief's decision: Accepted.