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Algorithmic Management and Psychological Distress Among Gig Workers: A Global Bibliometric Analysis and Science Mapping Review (2015–2026)

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***Abstract*—Background: Digital labour platforms create psychological demands in gig workers by automating management processes such as allocation, surveillance, pricing and performance evaluation. These gig workers are flexible and can work across platforms, locations and times. Flexibility requires a high level of worker control to accomplish tasks. Published studies synthesizing algorithmic management and gig workers' mental health remain limited. This paper defines the field and presents a step-by-step reproducible method of science mapping of gig-worker research from 2015–2026 using Scopus. Studies on gig workers indicate that control and precariousness contribute to adverse mental health outcomes, although negative effects are not absolute. A new bibliometric corpus and compatible effect-size dataset were not provided; therefore, a pooled effect estimate was not reported. The paper introduces the Algorithmic Control–Distress Pathways Framework, outlines what will be required for future reviews, and identifies key policy gaps.**
Evidence boundaries and disaggregated outcomes are explicitly documented to prevent false precision in quantitative claims.

I. INTRODUCTION

Digital platforms automate work assignment and price-setting, use customer feedback to set wages, and instate sanctions for violation of non-transparent performance standards. Such arrangements may generate temporal flexibility but are likely to remove managerial discretion and/or other means of performance evaluation, wage determination, and/or access to future work. Differentiation is crucial. Flexibility in work scheduling should not be mistaken with discretion to set performance standards and/or wages. Duggan et al. (2020) studied 'app-work' as a separate field of employment, while Kellogg et al. (2020) examined algorithmic management as a control system in the workplace.

Psychological impacts should be assessed beyond generalized job satisfaction. Income volatility, extreme control and surveillance, reliance on ratings, and irregular hours may all contribute to mental illness. Use of technology, individual differences and context may influence pathways to harm. Wood et al. (2019) pointed to the combined effect of loss of control and constant exhaustion as a feature of platform work. This claim, however, would be misleading, given the large degree of heterogeneity among users of digital platforms.

Both reviews cite existing work to manage mechanisms of harm while highlighting knowledge gaps and unearthed important managerial shortcomings. Kadolkar et al. (2025) used 465 publications, which they clustered using topic modeling into 12 categories, as their multi-source corpus, which represented an extension of prior scholarship on algorithmic management. Margerison et al. (2025) also identified health-related studies (including 10 focusing on mental health) with similar, overlapping outcome measures. Both reviews demonstrated that health outcome and managerial mechanisms studies suffer from similar methodological shortcomings.
This article examines how scholarship should be mapped, the mechanisms that connect control to psychological outcomes, what the existing data establish, and when a legitimate case can be made for using meta-analysis to assess an association. It provides a conceptual framework with an analytical specification, and separates published results from analyses that require exporting or otherwise creating a researcher's own database.

II. METHODOLOGY

2.1 Design and evidence provenance. The present deliverable is a source-verified critical synthesis with an executable systematic review and bibliometric analysis protocol. It is not represented as a completed Scopus census. Sources were verified by the publisher or PubMed for relevance and accuracy. Search outputs, screening totals, duplicate decisions, and extracted data were not available. The design therefore provides descriptive numbers only if they originated in a published paper.

2.2 Reproducible database search. The focus of the sampling frame is 2020 onward. A reproducible search of Scopus will include the titles, abstracts, and key words of research articles published in the English language between 1 January 2015 and 25 October 2026. The search will combine the terms "algorithmic management" or "algorithmic control" or "algorithmic surveillance" or "digital monitoring" or "automated evaluation" with "gig work" or "platform work" or "ride hailing" with "delivery rider" or "crowd work" and "psychological distress" or "stress" or "anxiety" or "depression" or "burnout" or "mental health" or "wellbeing" or "well-being." Retain identifiers, affiliation fields, and the time of retrieval for each record. Remove the "mental health" block to capture the broader, theoretical, and bibliometric literature. Have a librarian review the term recall against sentinel works.

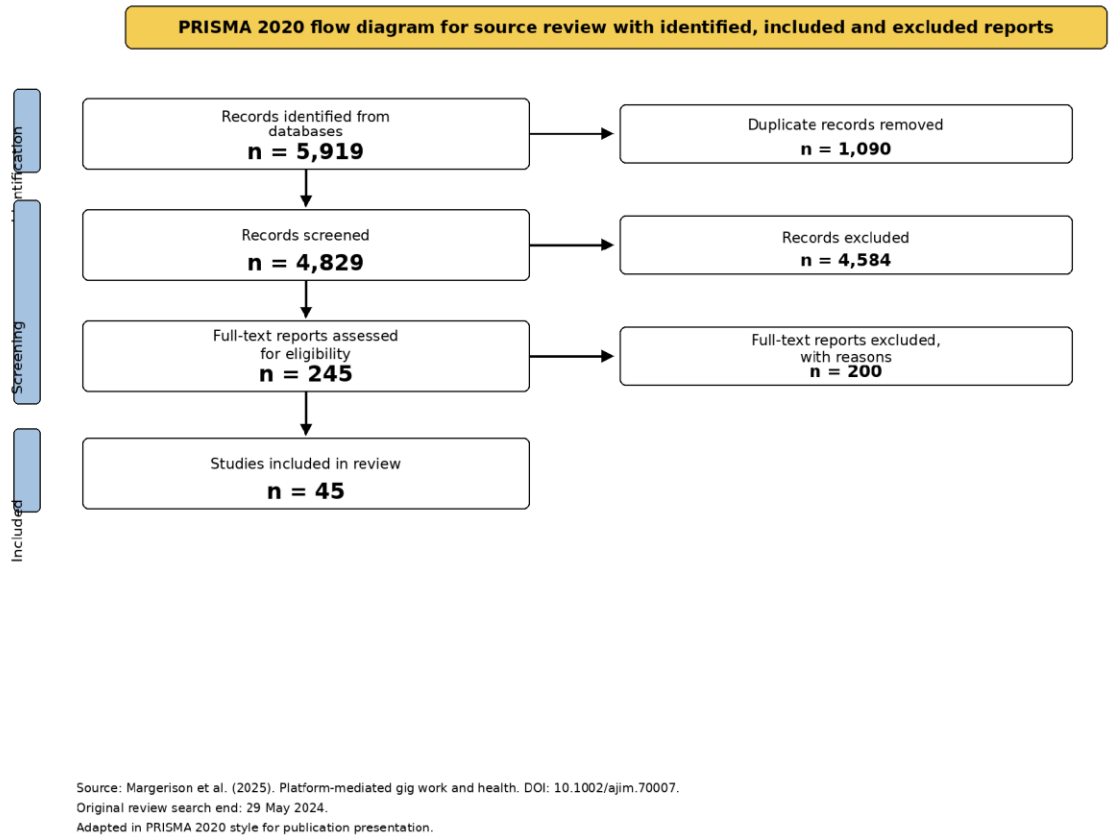
2.3 Screening and critical appraisal. Remove duplicates using DOI, exact title, and fuzzy matching; keep original record identifiers. Two reviewers will screen titles and abstracts, and full-texts as necessary. The scholarly publications in the bibliometric set will be screened. Health Synthesis and Meta-analysis sets will require processing of psychosocial data and identification of gaps and inconsistencies, respectively. Reporting will be done using PRISMA 2020 (Page et al., 2021) and PRISMA-S (Rethlefsen et al., 2021). Assess cross-sectional confounding using risk of bias assessment and ensure exposures reflect true ordering and missing data. Resolve disagreements with an adjudicator and report agreement.

2.4 Science mapping. Use bibliometrix to analyze annual publications and co-authorship, as well as thematic changes and collaboration over time. Use VOSviewer to analyze citation and co-citation networks, and keyword co-occurrences. Standardize country names, author variants, and synonyms such as gig-worker and platform-worker. Document occurrence thresholds and normalize associations and clusters. Cite referenced literature. Interpret unstable clusters as undetermined. Perform sensitivity analyses to evaluate effects of varying parameters. Intellectual schools should be determined retrospectively, rather than determined a priori.

2.5 Meta-analytic decision rules. Pool only studies measuring sufficiently comparable psychological endpoints that provide recoverable coefficients and sampling variances. Eligible correlations should be converted to Fisher's z; for group differences, use standardized mean differences, and analyze incompatible scales separately. Random effects models should be fit using the restricted maximum likelihood method. Pooled estimates should be reported along with confidence and prediction intervals, tau-squared, and I-squared. Where dependence is suspected, use a multilevel or robust variance method. Prespecify platform type, region, measure and study design as moderators. Investigate small-study effects and influential cases only if statistically justified. Never assume an effect size from a sample size or qualitative narrative.

2.6 Data governance and reproducibility. Keep records of Scopus-licensed exports, and retain a metadata-only copy if redistribution is not allowed. Record search dates and review decisions. Keep records of cleaning dictionaries and correction checks. Prespecify exclusion rules. For effect-size extraction, identify sample, outcome, instruments, models, and adjustment sets. Leave confidence limits blank if they are not reported. The companion scripts check required fields and do not allow estimation if evidence is insufficient. No estimates are manufactured.

Figure 1. PRISMA 2020 flow diagram adapted from Margerison et al. (2025).



Source: Margerison et al. (2025), Platform-mediated gig work and health. https://doi.org/10.1002/ajim.70007. Original scoping-review search end: 29 May 2024.

III. RESULTS AND EVIDENCE SYNTHESIS

3.1 Scope of prior reviews verified. Kadolkar et al. (2025) identified 12 thematic areas in a 465-document interdisciplinary sample and described how managerial inputs, mediating processes and employee outcomes were nested in the framework in an input-process-output (IPO) manner. Margerison et al. (2025) reviewed 45 studies on platform work and health, of which 10 reviewed mental health and 18 reviewed mental well-being (with some studies covering more than one area). These numerical facts reflect different previously published reviews, and not a recently retrieved dataset. They cannot be summed to a PRISMA denominator to determine Scopus growth rates or be used as counts of studies eligible for meta-analysis.

3.2 Control and autonomy. Wood et al. (2019) combined interviews with 107 workers and a survey of 679 workers, across multiple countries, studying remote gig work. Their study described task flexibility and juxtaposed it with irregular and long hours, mental, physical and social isolation,

disruption and exhaustion. Duggan et al. (2020) argued that allocation of work and performance management through apps should be analyzed using employment relations in place of an undifferentiated analysis of all gig work.

3.3. Empirical contrasts. Chen et al. (2025) used two-wave observations of 314 Chinese gig workers to illustrate the effects of standardized directions, evaluation, and behavioral constraints on depletion and safety. Li et al. (2025) showed that purpose and process transparency may represent different resources that are associated with employee disengagement. Zha, Hu, et al. (2026) used three-wave observations of 639 workers and found that job precarity and autonomy mediated the negative impact of algorithmic management on worker well-being. Perceived union instrumentally mediated the negative effect on well-being. Gao et al. (2026), using three waves of 321 drivers, found that positive well-being was indirectly affected through job crafting (i.e., avoidance) and that psychological well-being was negatively impacted through avoidance job crafting, however, the authors did not support their claim with evidence.
Zha, Zhang, et al. (2026), using observations of 389 Chinese delivery workers, showed that challenge and threat appraisal were both present in response to algorithmic management. Challenge appraisal was related to higher workplace well-being; threat appraisal was related to lower workplace well-being. These findings contradict the assumption that exposure to an algorithmic management system has a fixed negative effect on psychological well-being and resources.

3.4 Analytic status. An independent Scopus export and screening log were not provided, making annual publication trajectories, citation networks and pooled distress effects unavailable. Figure 1 presents the published PRISMA 2020 screening flow adapted from Margerison et al. (2025). Source-reported samples are presented in Figure 2. Publicly reported mediation effects and their bootstrap confidence intervals, along with two published correlational effects, are shown in Figure 3. Given the variety of constructs depicted in the figures, no cross-study pooled effect is hypothesized.

3.5 Comparative interpretation. Studies examining use of algorithmic control, rules and surveillance, and ways in which such control is explained to, and engages, employees to impose automated sanctions, differ in terms of the effects, including stress and distress. It is important to tease apart management's direct actions from the employee appraisal. True differences in study designs, participant populations and measurement may provide a more plausible explanation for differences seen across studies than a universal adverse or protective effect.

3.6 Publication and sample interpretation. Kadolkar et al. was published online in 2024 but appeared in the 2025 volume. Document counts and sample sizes of participants are not the same things. Repeated surveys over time or increased sample size do not establish a causal effect without the presence of validated measures and appropriate comparison groups. Routine screening counts

are source specific. Correlations do not indicate causation. No pooled clinical-distress effect is suggested. When in doubt, be judicious with assumptions. Constructs should be aligned for comparisons.

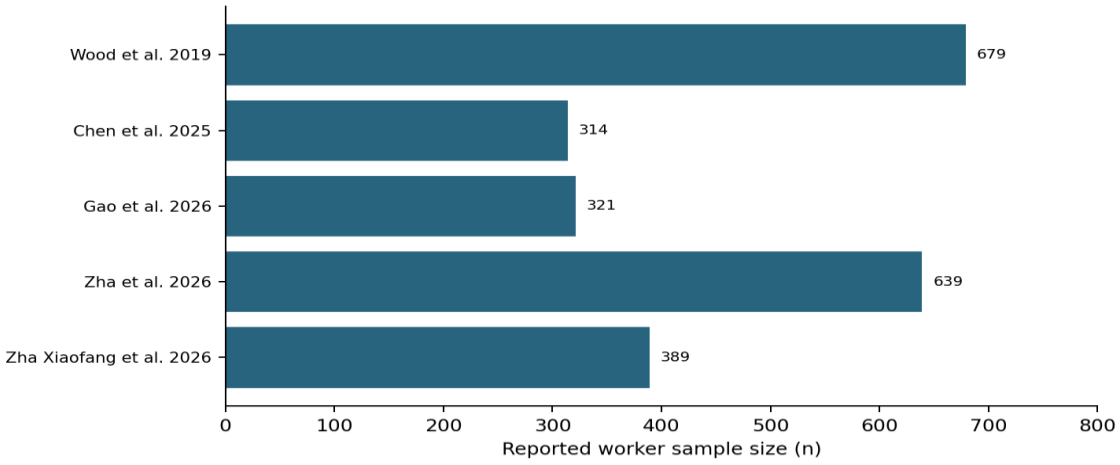
Table 1. Published review-level evidence; denominators belong to each cited source.

Source	Verified scope	Interpretive caution
Kadolkar et al. (2025)	465 documents; 12 modeled topics	Multidatabase review; not this Scopus corpus
Margerison et al. (2025)	45 studies; 10 mental-health; 18 mental well-being	Health categories overlap; no shared denominator

Table 2. Selected source-verified empirical findings.

Study	Sample/design	Principal reported pattern
Wood et al. (2019)	Survey n=679; interviews n=107	Flexibility coexists with overwork and exhaustion
Chen et al. (2025)	Two-wave n=314	Control dimensions differ in depletion/safety associations
Gao et al. (2026)	Three-wave n=321	Some positive indirect pathways; psychological pathway unsupported
Zha et al. (2026)	Three-wave n=639	Autonomy/precarity mediators; union instrumentality moderator
Zha Xiaofang et al. (2026)	Survey n=389	Challenge and threat appraisal diverge for well-being

Figure 2. Published worker sample sizes, not pooled effects.

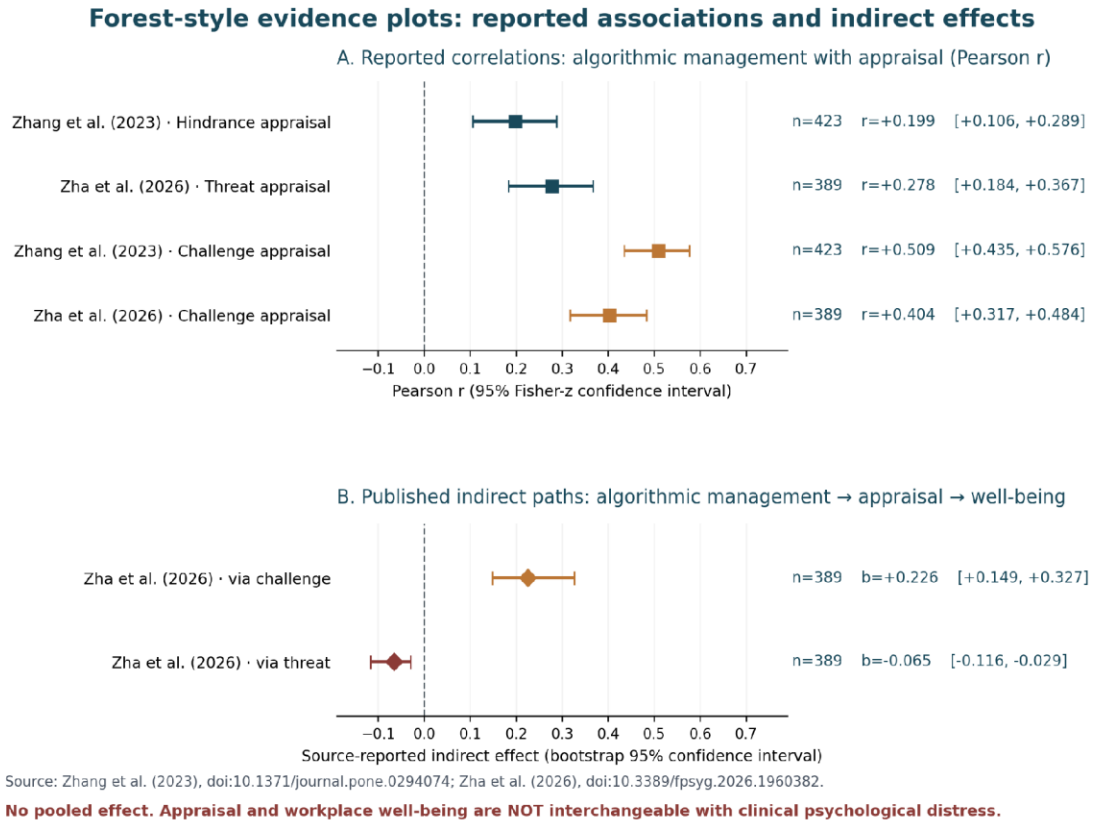


The figure reports sample sizes from distinct publications for descriptive orientation. Studies differ in design and outcome; bar length is not effect strength.

Table 3. Quantitative evidence requirements and current analytical status.

Analysis	Minimum input	Status
PRISMA counts	Export IDs and individual screening decisions	Published-review counts shown; new Scopus counts unavailable
Citation / keyword networks	Scopus CSV with cited references and author keywords	Not performed
Forest-style published effects / pooled meta-analysis	Compatible estimate plus SE/CI per eligible independent study	Six sourced effects plotted; pooled distress meta-analysis not performed
Funnel and bias diagnostics	Sufficient eligible effect estimates and study diversity	Not appropriate

Figure 3. Forest-style, source-verified effect display: four Pearson correlations (with 95% confidence intervals calculated from source-reported n and r) and two source-reported indirect-effect estimates (bootstrap 95% CIs). No pooled estimate.



Numerical details: hindrance appraisal r = 0.199, 95% CI calculated from n = 423; threat appraisal r = 0.278, n = 389; challenge appraisal r = 0.509, n = 423, and r = 0.404, n = 389. Zha et al. (2026) additionally reported challenge-mediated b = 0.226 (95% bootstrap CI 0.149–0.327) and threat-mediated b = −0.065 (−0.116 to −0.029), each from n = 389. Distinct pathways and outcomes are not pooled (Zhang et al., 2023; Zha et al., 2026).

IV. DISCUSSION AND ORIGINAL FRAMEWORK

4.1 Integrating theories. For Job Demands-Resources, constant monitoring, evaluation pressure and unpredictable income may lead to exhaustion, while routing efficiency, open communication, and scheduling latitude may be considered resources. For Conservation of Resources, unpredictable ratings and the threat of deactivation may erode resources (i.e. lead to distress). Organizational Justice theory focuses on voice, clarity of sanctions and ratings. The Labour Process theory provides an imbalance in information and control between platform owners and workers. These theories, in general, correspond to levels of analysis, from the platform governance to the individual assessment.

4.2 Algorithmic Control–Distress Pathways Framework. The framework consists of four components. The first component is composed of tracking, allocation, pricing and customer-rating dependencies, as well as unpredictable sanctions. The second component includes perceived control, job precarity and fairness, as well as challenge-threat appraisal and resource depletion. Third component, moderators, may include employment dependence, platform category, jurisdiction, union presence, individual resilience and human review. The last component includes anxiety, depression, psychological distress and burnout. Reciprocal effects are expected as distressed workers may change their acceptance rates or take a break from a platform, for example, and affect their algorithmic treatment in the future.

4.3 Novelty and limits. The main claim of the submission is not that no reviews of gig work exist. Several reviews exist, and the submission does not specify these. The main contribution of the submission is to outline a construct-aligned health pathway model with a clear rationale and transparent eligibility criteria for global bibliometric and causal evidence synthesis. There is considerable uncertainty about the temporal sequence of the studies, and conditioning on the platform participation may cause selection bias. There may be residual confounders (e.g. Country-level labour protections, financial necessity, platform-business models) that could modify exposure-outcome relationships. Language and database barriers will also affect any potential bibliometric map, and Scopus is just one of many sources. Thus, it may be beneficial to consider other sources if available.

4.4 Policy implications. Platforms should publicly disclose the algorithms for assigning work, rating performance and terminating contractor status, and afford contractors the opportunity for

appeal. Regulators should be able to audit Platforms to ensure notice for changes to calculation of payments to workers and other changes to how data are used, while also protecting the rights of worker representation and collective bargaining. Health researchers should assess for mental health outcomes and evaluate the impact of other potential residual confounders of financial insecurity and unemployment. Interventions should evaluate the impact on predictability of earnings and mental health outcomes.

4.5. Future evidence agenda. Key designs comprise prospective multi-platform cohorts, with repeatedly measured validated distress scales, quasi-experiments surrounding policy or algorithm changes, and studies of transparency, appeal and worker representation. Researchers must retain item-level metrics, adjustment sets, and uncertainty estimates to perform prospective analysis at the individual-participant or aggregate level. Bibliometric studies must publish 'cleaning' dictionaries, 'time window' decisions, and social network analyses of threshold networks along with raw data (in a format and level of detail permitted by the licensing terms). Cross-national comparative studies must define worker classification, social protection, and market concentration. A registered protocol should separate primary effects from mediation, especially when post-exposure measures are controlled, and provisions for measuring potential confounders are made.

4.6. Operationalization and Equity. Future work must conceptually separate algorithmic determination of scheduling and pay from scrutiny and sanction to ensure validity and control for ordering in time. Worker selected hours reflect discretion and financial necessity. Cross-national research must report employment protections and describe language and gender when studying recruitment and platform dependence. Interventions should improve contestability, rather than shift burden on vulnerable workers.

Figure 4. Proposed Algorithmic Control–Distress Pathways model (editable components summarized below).

Algorithmic exposures	Mechanisms	Psychological outcomes
Tracking; pricing; ratings; sanctions	Autonomy; precarity; fairness; appraisal	Distress; anxiety; depression; burnout
Moderators across pathways	Worker dependence; resilience; union voice	Separate well-being and safety endpoints

This model specifies hypotheses for testing; arrows represent proposed relationships, not estimated causal coefficients.

V. CONCLUSION

Management by algorithms intensifies psychological demands in the workplace through increased uncertainty and surveillance and a reduction in contestability, however, empirical findings suggest

that the use of algorithms can also increase workplace guidance and autonomy and offer benefits that are dependent on an individual's appraisal. Verified reviews of the literature have indicated a conceptual fragmentation and a paucity of health-related evidence; recent multi-wave studies have documented a high degree of variation in context. The Algorithmic Control-Distress Pathway Framework synthesizes competing mechanisms of the phenomenon and helps to distinguish between clinical symptoms, well-being and employment-related outcomes.

A high-quality global Scopus Q1-level systematic review, for example, would require fully search exportable requests, independently verified selection decisions, and quality appraisal and effect-size data that would permit pooling. This evidence synthesis provides a route toward such analyses. Additional studies should integrate measurement over time, audits of explainable algorithms, and workplace governance to help define the boundary between psychosocial supports and psychosocial risks and help answer when digital supervision crosses that line.

The main concern is to differentiate the effects of platform rules and algorithmic controls, utilizing comparable methodology. Trusted evidence grading and public protocols would improve review credibility more than added untraceable numbers.

There is a need to report the prevalence of symptoms as well as the distribution of occupational risk across worker groups to positively impact public health.

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