

The Serial Mediating Role of Work Stress and Social Alienation in the Relationship Between Perceived Algorithmic Control and Gig Worker Burnout

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Abstract. With the steady growth of the platform economy, algorithmic management has increasingly shaped the day-to-day lives of gig workers. Yet, the psychological cost of working under opaque, automated surveillance remains under-explored. To address this gap, the present study draws on Conservation of Resources (COR) theory to test how perceived algorithmic control leads to job burnout. A multi-stage process is proposed: algorithmic demands trigger immediate work stress, which then breaks down a worker's social ties, leading to alienation and ultimate exhaustion. Survey data from 307 Chinese gig workers across the ride-hailing, food delivery, and e-commerce sectors were analyzed using hierarchical regression and bootstrap serial mediation. The results strongly supported the hypotheses. The data show a clear resource loss spiral. Algorithmic constraints create acute stress. This stress directly isolates workers, and the resulting social alienation heavily drives final burnout. This indirect path accounted for a major share of the variance. By highlighting relational detachment as a crucial stepping stone to burnout, this research extends COR theory to digital labor contexts and offers practical ways to build more human-centric platforms.

Keywords: perceived algorithmic control, work stress, social alienation, job burnout, serial mediation

1. Introduction

Over the past decade, China's platform economy has grown at a pace that few other labor markets have matched. Official estimates indicate that by 2023, more than 200 million workers were drawing part or all of their income from digital labor platforms, spanning food delivery, ride-hailing, logistics, and freelance services [1]. The driver of this expansion is not only technological; it is also organizational. Major platforms such as Meituan, Didi, and Ele.me now rely on automated systems to allocate tasks, track real-time positioning, evaluate output, and calculate pay. For many gig workers, those continuous digital functions have effectively replaced the human supervisor, producing an oversight environment that recent scholarship has begun to describe as an "algorithmic cage" [2].

The psychological consequences of such algorithmic dependence deserve closer scrutiny, and field reports are not reassuring. Delivery riders routinely work against system-generated countdowns; drivers face penalties from rating mechanisms whose criteria remain opaque; both groups describe a sense of being trapped in a cycle of algorithmic uncertainty [3]. Against this backdrop, job burnout, marked by emotional exhaustion, cynicism, and a reduced sense of professional efficacy, has surfaced as a recurring complaint across the gig workforce. Prior studies do confirm a direct link between automated management and worker distress, but the psychological pathways that translate technological constraint into occupational strain are still treated, for the most part, as a black box [4]. The present study argues that opening that box requires paying attention to mechanisms that have so far been under-specified.

One feature of platform-based labor that has been comparatively neglected is its structural isolation. Conventional employment tends to bundle work with shared physical space and informal collegial networks. Gig work rarely does. A typical day for a platform rider consists of solitary navigation, brief transactional exchanges with customers, and a stream of automated notifications, with little room for casual conversation, shared complaints, or the trust that builds between regular colleagues. Preliminary conversations at several Beijing service stations pointed in the same direction: workers entering the gig economy often reported a sharp drop in contact with friends and family, alongside a marked sense of relational detachment. Those observations suggest that social disconnection is not a peripheral concern; it is plausibly a missing piece in current explanations of how algorithmic control turns into burnout. The strain generated by the platform is not only cognitive. It corrodes interpersonal ties, and through that corrosion, it accelerates the slide toward exhaustion.

To examine that proposition, the present study sets up a serial mediation model grounded in Conservation of Resources (COR) theory and tests it with survey data from 307 Chinese gig workers [5]. Hierarchical regression and bootstrap-based techniques are used to estimate the indirect pathways. The core argument is that perceived algorithmic control initiates a cascading loss of resources. Cognitive and temporal reserves are depleted first, surfacing as acute work stress. Stress then drives workers toward social withdrawal, eroding relational resources and producing social alienation. The loss of both pools eventually drains whatever psychological reserves remain, and burnout follows. By placing social alienation at the center of the sequence, the analysis refines how COR theory applies to algorithmically managed labor, identifies relational detachment as a concrete intervention point, and supplies empirical evidence from a workforce that is large in number but underrepresented in the academic literature.

2. Theoretical background and hypotheses

2.1. COR theory and the logic of resource loss spirals

Hobfoll's Conservation of Resources theory remains a productive starting point for thinking about burnout in demanding work environments [5]. The theory rests on a documented asymmetry: the psychological impact of resource loss tends to exceed that of an equivalent gain. More relevant for the present analysis is the loss-spiral corollary. Once an initial loss has occurred, individuals become more vulnerable to subsequent threats, and those secondary losses in turn heighten exposure to further damage [6]. Platform labor offers a clean test case for that logic. System-generated performance demands are relentless, windows for recovery are narrow, and the structural conditions make it difficult for workers to break the cycle simply by logging off. Cognitive, temporal, relational, and affective reserves are drawn down together, with little opportunity for replenishment.

2.2. From algorithmic control to work stress

Perceived algorithmic control refers to the subjective experience of working within automated architectures that allocate tasks, monitor behavior, evaluate outcomes, and carry out disciplinary actions [7]. Those digital features place heavy demands on attention and time. A platform rider, for example, has to navigate strict countdowns, real-time tracking, and automated penalties, all of which compete for the same attentional bandwidth and produce an acute sense of time scarcity. Deciphering opaque platform logic is, on its own, a form of mental work; doing it continuously is exhausting. That sustained cognitive load is, the present study argues, most likely to crystallize in the form of elevated work stress [8]. From this reasoning, the following hypothesis is advanced:

Hypothesis 1: Perceived algorithmic control positively predicts work stress.

2.3. From work stress to social alienation

When resources come under threat, COR theory predicts that individuals will tend to adopt defensive postures in order to protect what remains [6]. For stressed gig workers, one readily available posture is social withdrawal. Sustaining relationships costs energy: emotional availability, conversational engagement, reciprocal support. Workers under chronic stress often have no surplus to spend on those activities. The architecture of gig work sharpens the problem. There are no break rooms for sharing grievances, no team lunches, and few opportunities to build the trust that comes from regular contact with the same colleagues. Workers under algorithmic pressure are therefore doubly exposed. As stressed individuals pull back from the limited social interactions available to them, a state of alienation takes hold, characterized by feelings of being isolated, misunderstood, and cut off from broader social life [9]. On that basis:

Hypothesis 2: Work stress positively predicts social alienation.

2.4. From social alienation to burnout

Social relationships sit at the core of COR theory's resource categories. Once that category is depleted, the individual has little buffer against further strain [10]. Workers who feel alienated lose access to the emotional validation, the informational support, and the collective coping that social ties normally provide. The remaining psychological reserves tend to drain quickly under continued work pressure. Burnout research has long argued that social disconnection, especially the depersonalization component, is not just a symptom. It also functions as a precursor and an accelerant of full burnout syndrome [6]. For gig workers, who already operate at the margins of organizational belonging, alienation may well be the point at which manageable strain tips into complete exhaustion. Hence:

Hypothesis 3: Social alienation positively predicts job burnout.

2.5. The sequential mediation hypothesis

Integrating the preceding arguments, it is proposed that algorithmic control, work stress, social alienation, and burnout form a sequential chain representing progressively deeper resource depletion. This chain embodies COR theory's loss spiral: algorithmic demands first drain cognitive-temporal resources (experienced as stress), the resulting stress then erodes social-relational resources (experienced as alienation), and the compounding loss of both resource types finally overwhelms psychological reserves (experienced as burnout). Each stage intensifies vulnerability to the next,

producing a self-reinforcing downward trajectory. This sequential logic leads to the central hypothesis, as illustrated in Figure 1.

Hypothesis 4: Work stress and social alienation sequentially mediate the positive relationship between perceived algorithmic control and job burnout.

H4: Serial mediation ($a \times b \times f$)

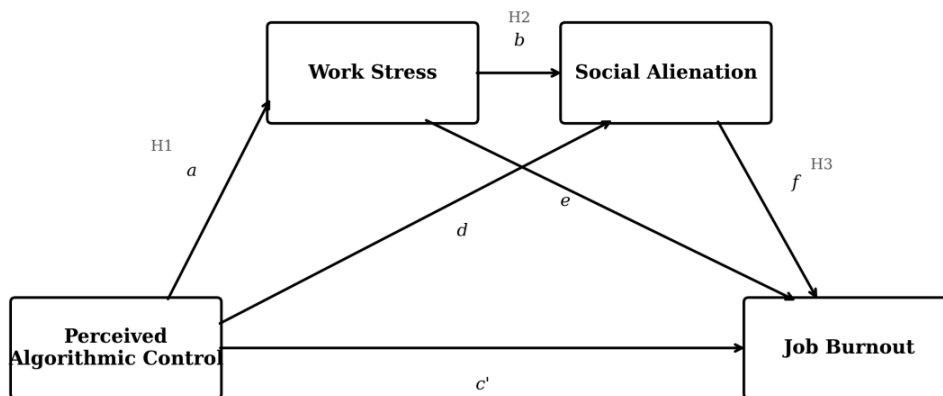


Figure 1. The research model

3. Method

3.1. Participants and procedure

Data were collected between November 2024 and May 2025 using a two-channel approach, with the aim of maximizing coverage of an inherently mobile workforce. In the first channel, field researchers approached platform riders during downtime at four Beijing service stations located in the Haidian, Xicheng, and Chaoyang districts. In the second channel, online questionnaires were distributed through WeChat groups, QQ groups, and gig-worker networks on social media, covering food delivery, ride-hailing, e-commerce livestreaming, and freelance tasks. To be eligible, respondents had to have been active on a platform for at least one month.

The initial collection yielded 351 returned questionnaires. A strict screening procedure removed low-quality cases. Researchers excluded entries with straight-line responding. They also removed scores outside the legitimate range. Cases with excessive missing data were discarded. Missing data meant omitting over five items on the perceived algorithmic control scale. It also meant missing over two items on any other focal scale. After that cleanup, 307 responses remained and were retained for analysis.

The final sample included 173 men (56.4%) and 134 women (43.6%). The age distribution concentrated in the 20-29 (26.1%) and 30-39 (24.8%) brackets, with additional respondents under 20 (13.4%), aged 40-49 (19.5%), and aged 50 or above (16.3%). Educational attainment ranged from senior high school or vocational training (28.0%) and associate degrees (26.7%) to bachelor's degrees (20.5%) and graduate qualifications (24.8%). Monthly income was most commonly 8,000-10,000 CNY (26.1%); 20.8% earned above 10,000 CNY and 13.7% earned below 2,000 CNY. Food delivery was the largest sector (36.5%), followed by e-commerce and livestreaming (22.8%), ride-hailing (22.5%), and a residual freelance category (18.2%).

3.2. Measures

Perceived Algorithmic Control was measured with the 11-item instrument developed by Pei et al. [7]. The scale covers automated task dispatch, behavior tracking, performance appraisal, and reward-penalty structures. Items include "The platform intelligently assigns my work tasks" and "The platform automatically evaluates my work quality." The Cronbach's alpha for this scale in the present sample was 0.970.

Work Stress was assessed with the 13-item gig worker stress scale developed by Gao et al. [8]. The scale taps task-dispatch pressure, time urgency, social-isolation stress, and emotional labor demands. A sample item reads, "The system dispatches orders at any time, making me unsure how to choose." The Cronbach's alpha was 0.956.

Social Alienation was measured with a scale adapted from the alienation measure originally developed by Jessor and Jessor and operationalized for the Chinese context by Zhang [9]. Items tap social disconnection, identity confusion, and normlessness. One reverse-coded item was dropped because of an inadequate factor loading, leaving a 12-item unidimensional scale. A sample item reads, "I often feel unable to participate in what others are doing." The Cronbach's alpha was 0.938.

Job Burnout was assessed using the emotional exhaustion and cynicism subscales of the Maslach Burnout Inventory-General Survey, with 7 items in total [10]. The personal efficacy subscale was excluded because it formed a separate dimension in the present sample and was negatively correlated with the core burnout items. A sample item reads, "Working makes me feel physically and mentally exhausted." The Cronbach's alpha was 0.898.

All items were answered on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Gender was retained as a control variable, given prior evidence that burnout susceptibility differs by gender.

3.3. Analytical strategy

Data analysis was carried out in SPSS 27.0, using the PROCESS macro (version 4.2) developed by Hayes [11]. The procedure unfolded in four steps. First, Harman's single-factor test was run to check for common method variance, and confirmatory factor analysis was conducted to test discriminant validity. Second, item analysis was used to verify scale quality, with corrected item-total correlations and item-deletion alphas calculated, and structural validity was evaluated through the Kaiser-Meyer-Olkin measure and Bartlett's test of sphericity. Third, descriptive statistics and bivariate correlations were inspected. Fourth, the serial mediation model was tested with OLS regression, using 5,000 bootstrap resamples to derive bias-corrected 95% confidence intervals for the indirect effects [11]. PROCESS Model 6 was chosen so that work stress would be specified as the first mediator and social alienation as the second, forming a single causal chain from perceived algorithmic control to job burnout.

4. Results

4.1. Common method variance testing

Mplus 8.0 was used for the factor-analytic work. The data collection captured all variables from the same respondents at a single time point. This design requires careful validation. Therefore, the analysis applied two complementary procedures. These procedures assessed potential common method bias. The first was Harman's single-factor test: all 43 measurement items were entered into

an unrotated principal component analysis. The first unrotated component accounted for 40.12% of the total variance, which sits below the 50% threshold suggested by Podsakoff et al. and indicates that no single factor dominates the variance structure [12]. The second was the confirmatory factor analysis reported in the next section, which provided stronger evidence. The four-factor model showed clearly better fit than the single-factor model, with substantial gaps in both CFI and RMSEA. Taken together, the two checks suggest that common method variance is not a serious threat to the validity of the present findings.

4.2. Confirmatory factor analysis and discriminant validity

To further verify discriminant validity among the four focal constructs, a series of confirmatory factor analyses were conducted comparing the hypothesized four-factor structure against plausible alternative models. Table 1 presents the fit indices for each model. The hypothesized four-factor model yielded acceptable fit indices, with CFI and TLI exceeding 0.90 and RMSEA below 0.06. Compared to the alternative models, the four-factor solution demonstrated clearly superior fit. The three-factor model that combined work stress and social alienation produced notably worse fit, as did the two-factor model that merged all mediator and outcome variables. The single-factor model showed poor fit across all indices. These results confirm that the four constructs are empirically distinguishable and that the relationships observed in subsequent analyses are not artifacts of construct overlap.

Table 1. Confirmatory factor analysis: model comparison

Model	χ^2	df	χ^2/df	CFI	TLI	RMSEA
Four-factor (hypothesized)	1609.00	854	1.88	0.94	0.93	0.05
Three-factor (WS + SA merged)	1882.70	857	2.20	0.92	0.91	0.06
Two-factor (WS + SA + JB merged)	2248.01	859	2.62	0.89	0.88	0.07
One-factor (all merged)	3825.36	860	4.45	0.76	0.74	0.11

Note. $N = 307$. Four-factor: PAC, WS, SA, JB as separate latent factors. CFI = comparative fit index; TLI = Tucker-Lewis index; RMSEA = root mean square error of approximation.

4.3. Reliability and validity

Internal consistency was strong across all scales. Cronbach's alpha values ranged from 0.90 to 0.97. These values exceeded the 0.70 threshold for acceptable reliability. Item analysis confirmed scale quality. All corrected item-total correlations exceeded 0.30. No item deletion improved scale reliability. KMO values exceeded .90 for all scales. This supported structural validity. All Bartlett's tests were significant ($p < 0.001$). These metrics confirmed data suitability for factor analysis.

4.4. Descriptive statistics and correlations

As shown in Table 2, the descriptive statistics and zero-order correlations offer strong preliminary support for the hypothesized resource loss spiral. These results support the resource loss spiral hypothesis. Perceived algorithmic control correlates positively with work stress ($r = 0.788$, $p < 0.001$). Work stress links strongly to social alienation ($r = 0.848$, $p < 0.001$). Social alienation then predicts job burnout ($r = 0.825$, $p < 0.001$). Adjacent constructs share stronger associations than non-

adjacent pairs. For example, the PAC–JB correlation is lower ($r = 0.528$). This pattern indicates progressive mediation. It rejects the presence of a single common factor.

Table 2. Means, standard deviations, and correlations

Variable	M	SD	1	2	3	4	5	6	7	8	9	10
1. Gender	1.44	0.50										
2. Age	3.00	1.28	0.040									
3. Marital status	1.46	0.50	0.122*	-0.084								
4. Education	2.38	1.15	0.160**	-0.001	0.058							
5. Monthly income	3.22	1.32	0.012	-0.132*	0.116*	-0.059						
6. Work tenure	2.54	1.07	0.013	-0.044	-0.078	-0.098	0.069					
7. Daily hours	2.93	1.26	-0.004	-0.002	-0.021	0.001	-0.022	-0.010				
8. PAC	1.90	0.95	-0.346***	0.011	-0.040	-0.356***	0.115*	-0.004	-0.067			
9. WS	1.82	0.78	-0.333***	-0.001	-0.050	-0.385***	0.103	-0.009	-0.082	0.788***		
10. SA	1.73	0.67	-0.309***	0.027	-0.018	-0.313***	0.009	-0.013	-0.069	0.712***	0.848***	
11. JB	1.70	0.64	-0.247***	-0.037	-0.024	-0.278***	0.086	0.069	-0.030	0.528***	0.775***	0.825***

Note. $N = 307$. Cronbach's α in parentheses on the diagonal for focal study variables. Gender: 1 = male, 2 = female; Age: 1 = under 20, 2 = 20–29, 3 = 30–39, 4 = 40–49, 5 = 50+; Marital status: 1 = unmarried, 2 = married; Education: 1 = high school/vocational, 2 = associate, 3 = bachelor's, 4 = graduate; Monthly income: 1 = below 2000 CNY, 2 = 2000–5000, 3 = 5000–8000, 4 = 8000–10000, 5 = above 10000; Work tenure: 1 = less than 1 year, 2 = 1–3 years, 3 = 3–5 years, 4 = above 5 years; Daily hours: 1–5 scale. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Gender and education correlate negatively with the primary constructs. This justifies their use as control variables. Independent-samples t-tests examined baseline gender differences. Male gig workers perceive higher algorithmic control ($t = 6.49$, $p < 0.001$, $d = 0.74$). Males endure greater work stress ($t = 6.17$, $p < 0.001$, $d = 0.70$). They also experience deeper social alienation ($t = 5.69$, $p < 0.001$, $d = 0.65$). Gender differences in job burnout were non-significant ($t = 1.66$, $p = 0.097$). However, these early disparities require controlling for gender in the regression models.

4.5. Hypothesis testing: sequential mediation

To formally evaluate the sequential framework, standardized ordinary least squares (OLS) regressions were executed via the PROCESS macro (Model 6) [11]. Table 3 details the results. The stepwise models support the resource depletion hypothesis. The first model tests algorithmic constraints. These constraints strongly increase worker stress ($\beta = 0.788$, $p < 0.001$, $R^2 = 0.621$). This result directly supports Hypothesis 1. The next step examines the loss spiral. High stress significantly increases social alienation ($\beta = 0.757$, $p < 0.001$). This effect holds after controlling for initial algorithmic demands. This finding validates Hypothesis 2 ($R^2 = 0.724$). The final equation evaluates job burnout. Social alienation heavily predicts this exhaustion ($\beta = 0.642$, $p < 0.001$). It adds predictive power beyond all preceding variables. This result corroborates Hypothesis 3. The integrated model captures 73.3% of the variance in burnout.

Table 3. Sequential mediation regression results (PROCESS Model 6)

Equation	Predictor	β	SE	t	R ²	F
Model 1: Work Stress	PAC	0.788	0.035	22.351***	0.621	499.56***
Model 2: Social Alienation	PAC	0.115	0.049	2.361*	0.724	399.62***
	WS	0.757	0.049	15.485***		
Model3: Job Burnout	PAC	-0.294	0.049	-6.050***	0.733	277.61***
	WS	0.462	0.064	7.173***		
	SA	0.642	0.057	11.365***		

Note. $N = 307$. β = standardized regression coefficient. Gender controlled in all equations. *** $p < .001$, * $p < .05$.

4.6. Bootstrap results for indirect effects

As detailed in Table 4, 5,000 bias-corrected bootstrap resamples evaluated the mediation pathways. The focal serial trajectory (from algorithmic constraints through work stress and relational detachment to burnout) generated a significant indirect effect of 0.376 (95% CI [0.248, 0.515]), confirming Hypothesis 4.

Isolated channels also proved significant: algorithmic control elevated burnout via work stress alone (effect = 0.366, 95% CI [0.179, 0.582]) and social alienation alone (effect = 0.076, 95% CI [0.003, 0.171]), yielding a total indirect effect of 0.818 (95% CI [0.585, 1.089]).

Partitioning out these resource-depleting pathways exposed a competitive mediation dynamic. The residual direct association between automated governance and burnout emerged as significantly negative ($c' = -0.290$, 95% CI [-0.495, -0.113]). This suppressive pattern suggests a dual function: while rigid algorithms drive the exhaustion spiral, their structured nature may concurrently buffer against burnout by supplying explicit task clarity.

Table 4. Bootstrap results for indirect effects (5,000 resamples)

Indirect Path	Effect	Boot SE	95% CI Lower	95% CI Upper
Total indirect effect	0.818	0.130	0.585	1.089
PAC → WS → JB	0.366	0.102	0.179	0.582
PAC → SA → JB	0.076	0.043	0.003	0.171
PAC → WS → SA → JB	0.376	0.069	0.248	0.515
Direct effect c'	-0.290	0.100	-0.495	-0.113

Note. $N = 307$. Bias-corrected percentile bootstrap method. Effects are significant when confidence intervals exclude zero.

5. Discussion

The central question behind the present study was how automated governance comes to compromise the well-being of gig workers. The empirical results point to a single dominant story: intense algorithmic oversight produces immediate cognitive strain in the form of work stress; that strain gradually erodes interpersonal ties, surfacing as social alienation; and the combined loss of cognitive and relational resources eventually tips workers into full-blown burnout. The pattern fits Conservation of Resources theory and pushes its logic into a corner of working life, platform labor,

that is highly structured but academically undermapped. The rest of this section unpacks the theoretical implications, the practical implications, and the limits of the analysis.

5.1. Theoretical contributions

On the theoretical side, the present study contributes by breaking the psychological toll of algorithmic management into a sequenced deterioration process rather than treating it as an undifferentiated black box [4, 13]. The empirical model maps an ordered trajectory of resource loss: cognitive and temporal reserves are drained first, experienced as work stress; relational reserves are then eroded, experienced as social alienation; and the combined depletion drives the final move into burnout. It is the compounding sequence, not acute stress alone, that does most of the explanatory work, a point worth underlining because prior literature has largely stopped at the stress-burnout link.

A second contribution is the placement of relational detachment at the center of the chain. The serial pathway (effect = 0.376, accounting for 46.0% of the total indirect variance) indicates that gig workers are not undone by cognitive overload alone. They lose, first, the social anchors that normally replenish psychological reserves: peer solidarity, a sense of common identity, the small reassurances of feeling part of a group. For a workforce outside formal organizational membership, the buffer between manageable pressure and severe burnout is unusually thin. Once interpersonal ties dissolve, exhaustion arrives quickly, consistent with Maslach and Leiter's [10] argument that relational distancing accelerates burnout rather than merely co-occurring with it.

Finally, the negative direct effect ($c' = -0.290$) complicates the standard narrative. Once the resource-depleting mechanisms are partialled out, the residual relationship between algorithmic control and burnout is negative, which suggests that automated systems may also carry a protective function [2]. The most straightforward reading is that rigid algorithmic architectures can, in some respects, help workers by clarifying task expectations and reducing decision load. The interesting question is no longer whether to criticize algorithmic control, but how to design it: keep the structural clarity that benefits workers, while systematically dampening the resource-draining tendencies that do harm.

5.2. Practical implications

Turning the empirical findings into actionable strategy requires identifying the most vulnerable joint in the depletion chain. In the present data, that joint is social alienation. Conversations with riders at Beijing delivery stations produced a consistent observation: workers operating in the same urban grid often report feeling invisible to one another, their paths crossing but rarely connecting. Because relational erosion carries a substantial share of the serial burnout trajectory, intervening at the alienation stage offers a way to short-circuit the broader loss spiral before it reaches burnout.

The present analysis points to a small number of targeted structural changes. Operationally, dispatch algorithms could be tuned to introduce localized overlaps between routes, creating natural windows for brief peer contact. Organizationally, human-moderated virtual communities could be cultivated to provide a stable social buffer against the isolation built into the work itself. At the regulatory level, algorithmic systems could be evaluated on their psychosocial footprint, with requirements placed on platforms to safeguard relational functioning alongside traditional occupational health metrics.

5.3. Limitations and future directions

Several limitations should be acknowledged. The cross-sectional design restricts causal inference: even though the theoretical chain implies temporal ordering, the data capture a single snapshot. Longitudinal designs or diary studies would provide a more rigorous test of the hypothesized sequence. The sample, while adequate for serial mediation, is drawn from a single national context. Chinese platform workers' experience may not generalize cleanly to gig workers in countries with stronger labor protections or different platform ecologies. Finally, all variables are self-reported. Harman's single-factor result (40.12%) is reassuring, but future research could strengthen the case for causality by pairing self-report measures with objective indicators of algorithmic intensity, such as platform log data on order frequency or penalty counts.

6. Conclusion

The contemporary platform economy places a vast workforce under the quiet, continuous governance of automated systems, and the psychological cost of that arrangement is only beginning to be mapped in a systematic way. The present study contributes a clearer picture of how those hidden costs accumulate. The evidence indicates a severe resource loss spiral. Algorithmic control does more than tire people out. Acute cognitive strain first fractures interpersonal ties. The resulting relational disconnection then feeds severe psychological exhaustion. The size of the indirect effect through this cascade is large enough to suggest that the sequence is a central feature of how platform work is currently experienced. The data also expose a structural paradox at the heart of platform labor: workers are hyper-connected to the system that assigns and rates them, yet profoundly disconnected from peers who do the same work in the same city. Closing that gap, between the logistical efficiency that algorithms deliver and the social fabric that workers need, is likely to remain one of the defining challenges for platform governance in the years ahead.

References

- [1] State Information Center. (2023). China sharing economy development report (2023). State Information Center. https://www.sic.gov.cn/sic/93/552/557/0223/11819_pc.html
- [2] Kellogg, D. L., Valentine, M. A., & Christin, A. (2020). Algorithms at work: The new contested terrain of control. *Academy of Management Annals*, 14(1), 366–410.
- [3] Rosenblat, A., & Stark, L. (2016). Algorithmic labor and information asymmetries: A case study of Uber's drivers. *International Journal of Communication*, 10, 3758–3784.
- [4] Duggan, J., Sherman, U., Carbery, R., et al. (2020). Algorithmic management and app-work in the gig economy: A research agenda for employment relations and HRM. *Human Resource Management Journal*, 30(1), 114–132.
- [5] Hobfoll, S. E. (1989). Conservation of resources: A new attempt at conceptualizing stress. *American Psychologist*, 44(3), 513–524.
- [6] Hobfoll, S. E., Halbesleben, J. R. B., Neveu, J.-P., et al. (2018). Conservation of resources in the organizational context: The reality of resources and their consequences. *Annual Review of Organizational Psychology and Organizational Behavior*, 5, 103–128.
- [7] Pei, J. L., Li, L., & Liu, S. S. (2021). Perceived algorithmic control among gig workers: Conceptualization, measurement, and validation. *Management World*, 37(8), 182–198.
- [8] Gao, X. Y., Zhang, Z. P., Qian, Z. C., et al. (2023). Gig workers' work pressure: Formation mechanism and scale development. *Nankai Business Review*, 26(3), 244–258.
- [9] Zhang, H. D. (2012). A study of alienation among urban residents: Based on the 2010 Shanghai survey. *Sociological Studies*, (2), 93–116.
- [10] Maslach, C., & Leiter, M. P. (2016). Understanding the burnout experience: Recent research and its implications for psychiatry. *World Psychiatry*, 15(2), 103–111.

- [11] Hayes, A. F. (2022). *Introduction to mediation, moderation, and conditional process analysis* (3rd ed.). Guilford Press.
- [12] Podsakoff, P. M., MacKenzie, S. B., Lee, J. Y., et al. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology*, 88(5), 879–903.
- [13] Chen, W. M., Xu, G. C., & Ma, H. H. (2024). The "double-edged sword" effect of perceived algorithmic control on gig workers' turnover intention: Based on conservation of resources theory. *Journal of Business Economics and Management*, (9), 49–61.