



# Whose 'flow' is it anyway? The demographic correlates of 'flow proneness'

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## ARTICLE INFO

### Keywords:

Flow  
Well-being  
Age  
Gender  
Socioeconomic status  
Education

## ABSTRACT

Flow states represent a form of optimal experience and contribute to higher levels of psychological well-being and enhanced performance. Research has documented certain personality factors that influence people's likelihood of experiencing flow. However, the association between demographic variables and flow proneness in various activities has been less thoroughly explored and existing findings are often inconsistent across studies. This research sought to explore the demographic correlates of flow proneness across different types of activities. We examined flow proneness' relationship with age, gender, socioeconomic status, and educational attainment. Using a largely representative sample of 4000 adults in the UK, participants completed three different measures of flow proneness and reported the activities where they most often experienced flow. Results demonstrated that, despite trends such as higher levels of education being linked to greater flow proneness, especially in work/study activities, the demographic factors had a minimal role in explaining either flow proneness or the activity sites of flow. Regression models containing all four demographic variables explained up to a maximum of 8 % of variation in flow scores. Promisingly, the study implies that the rewards of flow are not reserved only for certain demographic groups but rather should be available across society.

## 1. Introduction

Flow states are an important contributor to positive mental well-being (Isham et al., 2019) and performance (Harris et al., 2021). They are often referred to as an example of 'optimal experience' (Csikszentmihalyi & Csikszentmihalyi, 1988). But it is important to ask whether this possibility is open only to certain demographics; or whether flow represents a genuinely accessible route towards flourishing across society. Are flow experiences reserved only for groups with high incomes who may have better access to recreation or meaningful work? Is flow only accessible to those who are older and thus have had time to develop more skills? Does gender affect the opportunities to experience flow? Whilst knowledge of the antecedents and correlates of flow is continuing to grow, it is important not to forget how basic demographics might also play a role. This research therefore examines how demographic factors are associated with whether and where people experience flow.

### 1.1. Flow experiences

When an individual voluntarily chooses to grant all their attention to an activity, they may enter what is called a 'flow' state. During flow,

individuals are totally absorbed in an activity that is well-suited to their skill levels (Csikszentmihalyi, 1992). The task is not so hard that it becomes frustrating and anxiety-inducing, but also not so easy that it becomes boring. Focusing attention solely on an activity means that individuals lose track of time, are not preoccupied with the judgements of others, and experience a merging of action and awareness such that their movements feel effortless (Jackson & Eklund, 2004). During flow an individual feels in control and as though they are acting freely. They are engaged in the activity because they want to be, rather than because they are trying to gain some external rewards or are subject to external pressures (Csikszentmihalyi, 1992).

The field of Positive Psychology continues to make progress concerning the antecedents, experience, and consequences of flow. Frequent experiences of flow can enhance psychological well-being (Isham et al., 2019) whilst the experience of flow at work (Demerouti, 2006), school, or during hobbies such as sports and gaming (Harris et al., 2021) has been linked to improved performance and higher grades. Recent work has also suggested that flow may be able to support 'sustainable well-being' in that it tends to occur in activities with lower environmental costs (Isham & Jackson, 2022). That is, activities that are associated with lower greenhouse gas emissions and require fewer

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<https://doi.org/10.1016/j.paid.2023.112207>

Received 8 November 2022; Received in revised form 31 March 2023; Accepted 1 April 2023

Available online 25 April 2023

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material resources (e.g., sports, reading, and contemplative practices).

Some research has explored the individual difference variables that can influence people's likelihood of experiencing flow. For example, we now know that people who are more conscientious (Ullén et al., 2012) or have greater self-control (Isham et al., 2021) are more likely to experience flow. But whilst research is developing new knowledge for how these higher-level individual differences factors are linked to flow experiences, understanding still need to be developed concerning how more basic, demographic factors are associated with the experience of flow.

### 1.2. Demographic correlates of flow proneness

Few studies have sought to directly test the relationship between demographic factors and the likelihood of experiencing flow. Further, the work that has been conducted is often not generalisable and sometimes displays conflicting findings across studies. For example, some studies examining flow include age as a control variable or covariate in their analysis (e.g., Ullén et al., 2012), but very few explicitly assess its relationship with flow. Of the few studies that have been conducted, some suggest that age is only minimally associated with flow experiences (Tse et al., 2022). For example, Bonaiuto et al. (2016), who examined flow experiences during activities that participants identified as important to their identity, reported no differences in participants' experiences of flow across age groups. However, others have found that age was positively correlated with the tendency to experience flow in both work and leisure time (Kranjčev & Hlupić, 2021). There is therefore few and conflicting findings regarding the influence of age on flow experiences which makes it hard to draw reliable conclusions.

In terms of gender, Murcia et al. (2008), Russell (2001) and Ersöz and Eklund (2017) failed to find gender differences in flow proneness, but all these studies were focused only on sports and exercise activities. Heo et al. (2010) also reported no gender differences in the experience of flow in a sample of older adults, but their research was limited by a small sample size ( $n = 19$ ) and an uneven distribution of males ( $n = 6$ ) and females ( $n = 13$ ). Kranjčev and Hlupić (2021) reported that gender did not significantly influence people's tendency to experience flow when looking at the broader categories of work and leisure using an online opportunity sample of employed adults. Accordingly, existing findings suggest that gender may not have a strong association with flow experiences, but small and unrepresentative samples mean that such conclusions are not currently generalisable.

One might reasonably expect that individuals with a higher socioeconomic status, and therefore greater income, are more likely to experience flow. If people have more cognitively demanding jobs (which tend to be better paid, Deming & Kahn, 2018), then this could provide them with higher levels of challenge during their workplace activities which, in turn, should mean that they have more opportunities for flow. In line with this, research has shown that managers spend more time in flow at work than clerical or blue-collar workers (Csikszentmihalyi & LeFevre, 1989). Equally, if people have greater disposable income, then this may provide them with more opportunities to engage in a greater number of flow-supportive activities (e.g., paid-for sports academies or arts clubs). Counter to this hypothesis, Schmidt et al. (2014) found that socioeconomic status was not a significant predictor of adolescents' flow experiences. Research has also shown that many flow activities, for example mindfulness or drawing (Isham et al., 2019), do not require large financial investments. It is therefore currently unclear how socioeconomic status relates to the tendency to experience flow. The empirical work in this area has also relied on indicators of socioeconomic status such as parents' educational attainment (Schmidt et al., 2014), which makes it difficult to untangle relative effects of education and socioeconomic status.

Finally, regarding education, we may expect that individuals with a higher level of education have higher levels of skill in academic-related areas and are thus better able to successfully engage in challenging tasks

in these contexts. As with socioeconomic status, they are also likely to have access to jobs that are more cognitively demanding (Carbonaro, 2007). However, flow can also often occur in activities such as sports and gaming (Harris et al., 2021), which do not necessarily require skills that are developed in a classroom such as writing or numerical ability. It is therefore unclear in general how education might be related to flow proneness. In line with this, the existing literature does not produce any clear trends. Demerouti (2006) did not find that education level was significantly correlated with flow experiences at work for adults in the Netherlands, whilst Magyaródi and Oláh (2015) reported that, when considering solitary flow experiences only, education was positively linked to the frequency of flow.

### 1.3. Associations between demographics and flow experiences across different activity types

The previous section indicated inconclusive evidence surrounding the association between demographic factors and the overall likelihood of experiencing flow. This association could also be dependent upon the activity context. In other words, demographics may influence where people experience flow. For example, regarding gender differences, Han (1992) reported that older adult males were more likely to experience flow in leisure activities, whilst older adult females were more likely to experience flow in household activities. Equally, Magyaródi and Oláh (2015) found that older respondents and those with a higher education level were more likely to name work as an activity in which they experience flow in their survey with Hungarian adults. Other researchers have, however, suggested that younger adults are more likely to experience flow in work-related activities (Freire et al., 2021) or that age only had a minimal impact on where people experience flow (Tse et al., 2022). Again, there is some ambiguity across findings, with no clear trends surrounding how the sites of flow may or may not differ across demographic groups.

### 1.4. The present research

Given the potential value of flow experiences for supporting sustainable and fulfilling lifestyles (Isham & Jackson, 2022), it is important to understand which groups of people most commonly report experiencing flow. This understanding would not only address the distributional aspect of people's ability to experience flow, but it could also facilitate interventions to support those currently less prone to the experience. This study therefore aimed to test how demographic factors (age, gender, socioeconomic status, and educational attainment) relate to whether, how often, and where people experience flow. It is based on a large-scale survey with a representative sample of adults in the UK to facilitate coverage of different demographic groups.

## 2. Method

### 2.1. Participants

A sample of 4000 adults in the UK was recruited via an external market research company. Quotas were implemented concerning age, gender, socioeconomic status, and geographical region using the latest available government census data. See the Supplementary materials (SM1) for the quotas implemented and corresponding frequencies. 52 % of the sample were female and 48 % male. Participants selected which age group they fell into out of 18–24 (8 %), 25–34 (19 %), 35–44 (17 %), 45–54 (16 %), 55–64 (16 %) and 65+ (24 %). Thirty-seven per cent had completed a bachelor's degree or higher.

### 2.2. Measures

How often participants experienced flow (both overall and in different activity types) was measured using three instruments. Two

were Likert-style questionnaires that are common in flow research: the English version of Ullén et al.'s (2012) Swedish Flow Proneness Questionnaire (SFPQ) and the Short Dispositional Flow Scale 2 (S-DFS2, Jackson et al., 2008). The SFPQ asks individuals to rate how often (1 = *never*, 5 = *almost every day*) they experienced seven feelings characteristic of flow during their work/study ( $\alpha = 0.74$ ), household chores ( $\alpha = 0.72$ ), and leisure time ( $\alpha = 0.81$ ). Example items include “you feel completely concentrated” and “you have a sense of complete control”. The full scale (21 items, seven from each subscale) showed good reliability in the present study ( $\alpha = 0.89$ ).

The S-DFS2 asks individuals to rate how often (1 = *never*, 5 = *always*) they experienced nine different feelings characteristic of flow. These include “I feel I am competent enough to meet the demands of the situation” and “I am completely focused on the task at hand”. Often the S-DFS2 is completed in relation to a specific activity such as sports. However, because we were interested in both how often participants were experiencing flow in their day-to-day lives and in different types of activities, we asked them to complete the scale three times in line with the categories used in the SFPQ: in relation to their work/study ( $\alpha = 0.87$ ), leisure ( $\alpha = 0.87$ ), and household chores ( $\alpha = 0.89$ ). The full scale (27 items, nine from each subscale) showed excellent reliability in the present study ( $\alpha = 0.94$ ). For both the SFPQ and S-DFS2, taking the mean of participants' scores across the three subscales provided a score reflecting participants' general tendency to experience flow. The three subscales were also examined separately to determine how demographic factors related to flow in different types of activities. To reduce the time required of participants, they were allocated to complete either the SFPQ or S-DFS2, not both. We implemented quotas to ensure that the demographic profiles of the participants who completed each of the scales was the same.

The third instrument, the Flow Questionnaire (FQ; Csikszentmihalyi & Csikszentmihalyi, 1988), was completed by all participants. The FQ starts by proposing three descriptions of the flow experience (see Supplementary materials 2). Participants were asked to read the descriptions and to answer (*yes* or *no*) if they have felt similar experiences. The FQ therefore acted as a binary measure of whether participants had flow experiences. Pearson correlations demonstrated that those participants who answered *yes* on the FQ tended to have significantly higher overall flow scores on the SFPQ ( $r(2000) = 0.16, p < .01$ ) and S-DFS2 ( $r(2000) = 0.12, p < .01$ ). We took this to be an indicator of convergent validity across flow measures. After responding to the flow descriptions, those individuals who had reported experiencing flow were asked to list the activities that they were engaged in when they were having their flow experiences. To ease interpretation of results, we categorised participants' open-ended activity responses on the FQ into the same three activity types employed in the SFPQ and S-DFS2 (work/study, leisure, and household chores).

### 2.3. Analysis plan

To determine the extent to which each of the demographic variables was associated with the overall likelihood of having had a flow experience, we ran three regression models. The first two models were both linear regressions and the dependent variables were scores on the SFPQ and S-DFS2. The third model was a logistic regression whereby the dependent variable was whether participants reported having experiences similar to the flow descriptions (0 = *no*, 1 = *yes*) in the FQ. Across all models, the predictors were the four demographic variables of interest: age, gender, socioeconomic status, and educational attainment. These were converted into dummy variables.<sup>1</sup> The youngest age group, males, lowest socioeconomic status, and lowest educational attainment group were used as the reference categories given that existing research

had not indicated specific levels where differences may emerge.

To examine how demographic factors may be associated with the likelihood of having flow experiences across *different types of activities*, we ran a series of further regression models which explored the relationship between demographic factors and flow experiences in (a) work/study, (b) leisure, and (c) household chores. For each of the three activity categories, three regression models were run: two linear regressions that included activity subscale scores on the SFPQ and S-DFS2 as the dependent variable and one logistic regression which included whether participants reported experiencing flow within the specific activity category (yes or no). As with the overall flow proneness models, the predictors across all these models were age, gender, socioeconomic status, and educational attainment, converted into their respective dummy variables.

### 3. Results

The output of the three overall flow proneness regression models is displayed in Table 1. Collinearity checks revealed there was not a problem of multicollinearity amongst the independent variables in any of the models, with variable inflation factors (VIFs) all being  $< 1.13$ . All models were statistically significant, however the variance explained by each of the models was small. For the SFPQ, 7 % of variation in flow proneness scores was explained by the demographic variables. For both the S-DFS2 and FQ, only 2 % of variation in flow proneness scores was accounted for by the demographic variables.

The demographic variables therefore appear to only account for a small amount of variation in the extent to which people report experiencing flow. Despite this, Table 1 displays certain trends across the demographic variables. For example, no statistically significant gender differences were observed across all flow measures. The associations with socioeconomic status are inconsistent across flow proneness measures. Whilst socioeconomic status had no statistically significant relationships with whether participants identified themselves as having experiences like those described in the FQ, being in the AB (SFPQ:  $f^2 = 0.015$ , S-DFS2:  $f^2 = 0.002$ ) or C2<sup>2</sup> (SFPQ:  $f^2 = 0.007$ ; S-DFS2:  $f^2 = 0.003$ ) category was associated with greater flow proneness than being in the DE category across both continuous flow measures. For educational attainment, on the other hand, there was a consistent trend across all the measures whereby having completed a post-graduate degree was linked to higher levels of overall flow proneness in comparison to having had not completed any formal education, but effects sizes were very small especially for the continuous measures of flow proneness (SFPQ:  $f^2 = 0.004$ ; S-DFS2:  $f^2 = 0.004$ ; FQ: OR = 1.87).

The output of the regression models examining flow in the three specific activity contexts (*work/study*, *leisure*, and *household chores*) are outlined in full in Tables S3-S5 in the Supplementary materials. These models explained between 1 and 8 % of variance in flow proneness for each of the activity categories, indicating only small effects of the demographic variables. As with the overall flow proneness analysis, there were inconsistent results across flow proneness measures. For the work/study activity category, the SFPQ results indicated that having an education attainment of sixth form college or higher was linked to greater flow proneness in work/study than having no educational qualifications. However, such trends were not observed for the S-DFS2 or FQ. One consistent finding for work/study activities was that being in the AB socioeconomic group was linked to greater flow proneness than being in the DE group across all flow measures (SFPQ:  $f^2 = 0.014$ ; S-DFS2:  $f^2 = 0.003$ ; FQ: OR = 2.17).

Educational attainment was not linked to flow proneness in leisure activities. For the leisure category, the largest trend was that being in the AB socioeconomic group was linked to greater flow proneness than

<sup>1</sup> See Supplementary materials 3 for an explanation of why dummy coding was employed.

<sup>2</sup> Descriptions of each of the socioeconomic status categories are given in the Supplementary materials 1.

**Table 1**  
Regression assessing the relationship between demographic variables and overall flow proneness across the three flow measure.

	Model 1: SFPQ <i>F</i> (14) = 12.13, <i>p</i> < .001. Adjusted R <sup>2</sup> = 0.07 (N = 1973)					Model 2: S-DFS2 <i>F</i> (14) = 3.24, <i>p</i> < .001. Adjusted R <sup>2</sup> = 0.02 (N = 1996)					Model 3: Y/N on FQ <i>F</i> (14) = 60.92, <i>p</i> < .001. Nagelkerke R <sup>2</sup> = 0.02 (N = 3971)				
	B	SE B	<i>p</i>	Exp (B)	95 % CI B	B	SE B	<i>p</i>	Exp (B)	95 % CI B	B	SE B	<i>p</i>	Odds ratio	95 % CI odds ratio
<i>Age</i>															
18–24 (ref)															
25–34	0.38	0.32	.24	0.04	–0.25, 1.01	1.00	0.49	.04	0.07	0.03, 1.96	–0.14	0.13	.27	0.87	–0.39, 0.11
35–44	0.79	0.32	.01	0.08	0.17, 1.41	0.72	0.50	.15	0.05	–0.25, 1.69	–0.16	0.13	.20	0.85	–0.41, 0.08
45–54	1.20	0.31	<.001	0.12	0.58, 1.82	1.28	0.50	.01	0.09	0.29, 0.2.27	–0.23	0.13	.07	0.79	–0.48, 0.01
55–64	1.61	0.33	<.001	0.15	0.97, 2.25	1.46	0.50	.003	0.10	0.49, 0.2.44	–0.24	0.13	.07	0.79	–0.49, 0.02
65+	2.44	0.31	<.001	0.26	1.83, 3.05	1.80	0.48	<.001	0.13	0.86, 2.75	–0.43	0.12	<.001	0.65	–0.68, –0.19
<i>Gender</i>															
Female (male = ref)	0.13	0.17	.45	0.02	–0.21, 0.46	0.00	0.25	.99	0.00	–0.49, 0.50	0.03	0.07	.68	1.03	–0.10, 0.16
<i>Socioeconomic status</i>															
DE (casual workers, unemployed) (ref)															
C2 (manual workers)	0.97	0.26	<.001	0.10	0.47, 1.47	0.90	0.35	.01	0.07	0.22, 1.59	0.05	0.09	.62	1.05	–0.14, 0.23
C1 (junior professional)	0.52	0.24	.03	0.06	0.05, 0.98	0.00	0.40	1.00	0.00	–0.79, 0.79	0.02	0.10	.83	1.02	–0.17, 0.21
AB (higher managerial/professional)	1.37	0.25	<.001	0.16	0.87, 1.87	0.87	0.44	.05	0.07	0.02, 1.73	0.20	0.10	.06	1.22	–0.01, 0.40
<i>Educational attainment</i>															
None (ref)															
Secondary school (GCSE/O-levels)	1.04	0.74	.16	0.12	–0.42, 2.49	3.20	1.00	.001	0.26	1.25, 5.16	0.05	0.28	.88	1.04	–0.51, 0.60
Sixth form or college (A-levels/diploma etc.)	1.20	0.74	.08	0.16	–0.15, 2.76	2.87	1.00	.004	0.25	0.92, 4.82	0.23	0.28	.43	1.25	–0.33, 0.78
Bachelor's degree	1.52	0.75	.04	0.18	0.05, 2.99	3.12	1.01	.002	0.25	1.14, 5.09	0.34	0.29	.23	1.40	–0.22, 0.90
Post-graduate degree (e.g., master's)	2.21	0.78	.004	0.18	0.69, 3.73	3.00	1.06	.005	0.16	0.93, 5.08	0.62	0.30	.04	1.87	0.04, 1.21
Doctorate	2.09	0.95	.03	0.07	0.22, 3.96	2.45	1.41	.08	0.05	–0.30, 5.22	0.63	0.38	.09	1.87	–0.11, 1.36

being in the DE group across all flow measures (SFPQ:  $f^2 = 0.01$ ; S-DFS2:  $f^2 = 0.007$ ; FQ: OR = 1.87). Concerning household chores, the FQ measure suggested no associations with any of the demographic variables apart from gender whereby women were more likely to report experiencing flow than men (OR = 1.6). The SFPQ and the S-DFS2 measures, however, both indicated that being aged 65+ and having achieved a postgraduate degree were associated with flow proneness scores for this activity that were at least two points higher than being 18–24 or having no educational qualifications.

**4. Discussion and conclusion**

Overall, the demographic variables appeared to account for little variance in whether individuals reported having flow experiences or not, having been able to explain only up to 7 % of variation in overall flow proneness scores, and 8 % of variation in the activity category specific models. In many ways this is an encouraging result as it suggests that flow experiences are not reserved solely for certain specific demographic groups and thus can represent an accessible route towards flourishing across society if the correct conditions are in place.

Nevertheless, there were some trends with regards to the specific demographic variables. For instance, there were no gender differences in overall flow proneness across measures, a finding consistent with

previous studies reporting no gender differences in people's tendency to experience flow using the DFS (e.g., [Ersöz & Eklund, 2017](#); [Murcia et al., 2008](#)). What was also evident was the often-divergent findings from the continuous flow measures and the binary measure. When reflecting upon measures of flow, [Moneta \(2021\)](#) notes that one of the advantages of the FQ is that it does not impose flow experiences upon respondents. That is, individuals are free to state that they do not have flow experiences. In the case of the SFPQ and S-DFS2, respondents can be classified as having some degree of a flow experience if they report some experiences of high control or concentration, for example, when these features alone do not signify flow. This may be why we see some inconsistent findings across the two types of flow measures. One measure (FQ) assesses the incidence of the overall perception of flow, whilst the others (SFPQ and S-DFS-2) assess the frequency of the different flow characteristics, without them necessarily having to all be present at the same time. Taking the different socioeconomic status results across measures as an example, statistically significant, positive associations from the SFPQ and S-DFS-2 mean that adults in the AB and C2 groups experience the different individual flow characteristics (either in isolation or in varying combinations) more often than those in the DE group. However, the statistically non-significant association for the FQ implies that those in the AB and C2 group do not perceive themselves to have overall experiences of flow any more than those in the DE group.

The specific activity category models also explained only a small amount of variance in flow proneness scores across the different activity types. The effects within these models can, however, provide some clues as to how flow proneness could be encouraged in different contexts. Higher levels of education, for instance, were associated with higher flow proneness in work/study (when measured using the SFPQ) which suggests that improving inclusive access to higher education may have a small role to play in helping facilitate flow in this activity type. Magyaródi and Oláh (2015, p. 644) theorised that higher levels of educational attainment could predict “more complex and multifaceted tasks at work” which better support the conditions of flow. Education levels were not linked to flow proneness during leisure time, suggesting its benefits to flow may be limited to the workplace environment.

Within leisure activities, being in the AB socioeconomic group was associated with higher flow proneness scores (when measured using the SFPQ and S-DFS2) in comparison to the DE group. Being in the highest socioeconomic group may help to encourage flow experiences during leisure time because a higher income affords easier access to flow-conducive activities such as playing a musical instrument or being part of a theatre group. Greater disposable income could also provide the option to pay for services such as childcare or household cleaners, allowing more time to dedicate attention to hobbies. The effect of socioeconomic status may only be small because not all flow activities demand financial investments. For example, an examination of the types of activities in which US family members experience flow found common activity types to be exercise, meditation, and socialising with family and friends (Isham et al., 2019). Therefore, those individuals from poorer socioeconomic backgrounds can still find flow to some degree in activities that are more accessible to them.

A strength of the current study is the sample size and spread across the different demographic characteristics. However, we appreciate the findings are limited to the UK, a developed nation, and hence should not be generalised globally. In developing nations, where the typical standard of living may be much lower (Egger et al., 2021), the effects of factors such as socioeconomic status and education may be larger if individuals struggle to meet their basic needs. Additionally, the analysis is cross-sectional and therefore does not allow for causal inferences. Future studies could implement longitudinal designs which would help to track changes in people's flow experiences as they complete different educational stages and separate out the effects of age from cohort or period effects.

To conclude, this study explored how demographic factors are associated with the experience of flow across a large-scale representative sample of adults in the UK. The results demonstrated that there were small trends such as having a post-graduate degree being linked to greater flow proneness. However, the combined effects of age, gender, socioeconomic status, and educational attainment only account for minimal variations in adults' flow experiences, questioning the practical meaningfulness of the trends documented. Accordingly, the rewards of flow appear to be available, in principle, across society and to diverse demographic groups. Given this, it is important that more attention is granted to flow as a tool to boost human flourishing on a wide scale.

## Funding

This research was conducted with financial support from the UK Economic and Social Research Council (ESRC) in particular through grant no: ES/M010163/1 which supports the Centre for the Understanding of Sustainable Prosperity.

## CRediT authorship contribution statement

**Amy Isham:** Conceptualization, Methodology, Formal analysis, Investigation, Resources, Data curation, Writing – original draft, Writing – review & editing, Visualization. **Tim Jackson:** Conceptualization, Writing – review & editing, Supervision.

## Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

## Data availability

Data will be made available on request.

## Appendix A. Supplementary data

Supplementary materials and data to this article can be found online at <https://doi.org/10.1016/j.paid.2023.112207>.

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