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A Latent Profile Analysis of Impression Management Subgroups in the General Population and Their Individual Trait Correlates

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Abstract

Background

Impression management (IM) pervades human social life and shapes employment, belonging, and safety from stigma. Although IM comprises distinct facets, little is known about how they co-occur within individuals. We examined whether two key facets of IM, intentional use and self-efficacy, differentiate subgroup profiles in the general population as well as the individual trait correlates and mental health patterns of these subgroups.

Methods

Using self-report survey data from a large representative U.S. general population sample (*N*=972), we conducted latent profile analysis based on separate composite scores for IM intentional use and IM self-efficacy. Corrected multinomial logistic regression further characterized the socio-motivational, cognitive, and neurodivergent trait correlates of subgroup membership. Corrected distal outcome models compared symptoms of anxiety and depression, fatigue, and authenticity across subgroups, accounting for classification uncertainty.

Results

Three subgroups emerged. A “high intentional use and high self-efficacy” subgroup was marked by heightened social-evaluative pressures and ADHD traits and reported the poorest mental health, possibly capturing individuals who feel capable of managing impressions yet are compelled to do so due to social pressures. A “low intentional use and high self-efficacy” subgroup reported the most favourable mental health, likely capturing individuals who manage impressions selectively and live in environments with low evaluative threats. Finally, a “low intentional use and low self-efficacy” subgroup was marked by higher autistic traits, lower perspective taking and cognitive flexibility, and elevated fatigue, which may encompass people who find IM difficult and/or withdraw from demanding interactions. Notably, the subgroups with the poorest and most favourable mental health reported comparable IM self-efficacy, differing mainly in IM intentional use that appears mainly driven by social pressures.

Conclusions

This work extends prior variable-centred work with a multi-faceted, person-centred account of IM and signposts new research directions to understand individual differences.

These findings suggest that feeling capable of managing impressions does not necessarily correspond with better psychological wellbeing when IM is used extensively. Moreover, the findings suggest that efforts to support wellbeing, especially for those facing greater social-evaluative pressure and minority stress, may be better directed at changing the social conditions that mandate sustained IM.

Keywords:
Impression management; camouflaging; latent profile analysis; mental health; individual differences

Introduction

Human beings routinely adjust how they behave and disclose information to shape how others perceive them [1]. This process of impression management (IM) is shaped by social expectations to serve social affiliation, stigma and harm mitigation, and instrumental goal pursuit [2]. Camouflaging is a recently described form of IM in autistic people and people with autistic traits, which refers to strategies that modify or conceal aspects of autistic social presentation in neurotypical settings, such as suppressing motor mannerisms, forcing eye contact, or rehearsing conversational scripts [3, 4]. The transactional IM framework situates camouflaging within the broader IM phenomenon and treats its form and consequences as products of the interaction between individual characteristics and social environments [5], which encapsulates how IM can take on distinctive features in different human groups. For instance, autistic people may face heightened pressure and employ unique ways to manage impressions because of autism-related stigma, cognitive differences, and the pervasiveness of negative first impressions and environments organized around neurotypical norms [6–8]. Studying camouflaging alongside other established IM constructs across the general population reaffirms a shared conceptual foundation while drawing attention to the social circumstances and individual traits that shape how IM is deployed and experienced across the neurodiverse human populations.

Existing work in psychological sciences has examined a range of IM processes across organizational, educational, and stigma- or minority-focused settings, including self-presentation tactics, self-concealment, the self-monitoring and regulation of social behaviour [9–12], and camouflaging [3]. These constructs show partial conceptual overlaps but may also tap into different facets of the umbrella IM phenomenon. Early IM research, for instance, separates the motivation to manage impressions from the behavioural construction of specific self-presentations [2]. Researchers have also examined the multidimensionality of specific IM constructs. Concealing a stigmatized identity involves distinct cognitive, affective, and behavioural components [13], while emotional labour can vary in depth depending on whether felt and displayed emotions align (i.e., congruent, deep acting) or misalign (i.e., discordant, surface acting) [14]. IM

thus encompasses multiple facets of motivation, strategy, and capacity rather than one unidimensional social behaviour. Similarly, autistic lived experience and emerging empirical studies point to various aspects of camouflaging that span distinct behavioural strategies [15], degrees and types of camouflaging motivation [6], self-perceived and objective camouflaging ability [16], and internal experiences such as authenticity and effortfulness [17].

Adopting a multi-faceted view of IM enables researchers to ask how different facets give rise to individual differences in IM use and experience. For example, a meta-analysis of 193 studies reported that the association between sexual minority concealment and mental health varied depending on life course, sexual identity, and how concealment was operationalized, along with substantial between-study heterogeneity remaining unexplained [18]. Ecological momentary assessments suggest that identity concealment amplifies reactivity to daily discrimination for some individuals more than others [19], and the very function that concealment serves also differs across individuals depending on their avoidance coping habits [20]. In occupational settings, surface acting relates substantially to impaired wellbeing whereas deep acting shows only weak associations [21]. In the same vein, van der Putten et al. (2024) found that the link between camouflaging and mental health difficulties held strongly only within a small subgroup of autistic adults and was weak or absent for the rest [22]. Autistic adults also differ in where and why they camouflage, which carry distinct mental health implications [6].

Recent work has helped progress a clearer account of multi-faceted IM, incorporating the construct of camouflaging [5, 17, 23]. In a previous variable-centred analysis in a U.S. representative general population sample, a joint factor analysis of camouflaging and other IM measures provided evidence for two separable facets [24]. Measures of camouflaging, including the Camouflaging Autistic Traits Questionnaire (CAT-Q) [25] and Compensation Checklist [26], and measures of IM including the Self-Presentation Tactics Scale (SPT) [11] and the Self-Concealment Scale (SCS) [10] primarily reflected an “IM intentional use” facet, defined as the extent to which individuals reported intentionally engaging in behaviours to manage impressions. Meanwhile, items from the Revised Self-

Monitoring Scale (RSMS) [27] loaded on a separate latent facet that we termed “IM self-efficacy,” because they concern a person’s self-perceived ability to read social demands and adjust behaviour accordingly. Interestingly, a person’s IM intentional use and IM self-efficacy were only negligibly correlated and showed distinct socio-motivational, cognitive, and neurodivergent trait associations, suggesting that IM intentional use does not necessarily accompany feeling capable of managing impressions effectively. Higher IM self-efficacy was also associated with better mental health and attenuated the positive links between IM intentional use and symptoms of depression and anxiety [24].

Nevertheless, these variable-centred findings only characterize average associations across the sample and cannot reveal patterns in how IM facets configure differentially among individuals. Much camouflaging and IM research to date has also relied on categorical group comparisons (e.g., autistic versus neurotypical) that treat each group as internally homogeneous, even though substantial within-group variations exist. Meaningful subgroups cutting across predefined human categories (e.g., diagnosis) may emerge based on distinct IM facet patterns. For instance, similar levels of IM intentional use could accompany either high or low self-efficacy, and vice versa. Characterizing subgroups is therefore a productive pivot from how IM facets relate to a given trait on average to how particular patterns of IM facets present differently across the population and the consequences they carry. Person-centred methods such as latent profile analysis (LPA) address this directly by identifying subgroups whose members share similar personal attribute (e.g., IM facet) configurations [28]. Chawla et al. (2021) identified distinct profiles based on employees’ combined use of multiple IM tactics and showed that these profiles differed in experienced inauthenticity and work-related outcomes [29]. Likewise, Gabriel et al. (2015) used LPA to identify five emotional labour “actor” profiles in the workplace that differed in felt inauthenticity and exhaustion [30].

In this study, we revisited the representative general population sample of adults in Ai et al. (2025) [24] with a person-centred question. We examined whether IM facets form distinct subgroup profiles, each with differing patterns of individual trait correlates. We followed three sequential objectives. We first used LPA to identify subgroups based on

individuals' joint levels of IM intentional use and IM self-efficacy. Second, we tested whether socio-motivational traits (i.e., thwarted belonging, internalized stigma, social comparison orientation, public self-consciousness, and social anxiety), cognitive traits (i.e., overall executive functioning, cognitive flexibility, inhibition, perspective taking), and autistic and ADHD traits were associated with the relative likelihood of profile membership. Third, we examined if the identified profiles differed in mental health, including depression and anxiety symptoms, fatigue, and felt authenticity.

Methods Overview

Participants

This study initially included a total of 1,051 adults, all aged 18 years or older, who were capable of providing informed consent and online self-reporting. Participants were recruited over a 26-day period on Prolific, an online crowdsourcing platform where individuals voluntarily engage in web-based research in exchange for monetary compensation. Participants received compensation at a rate of USD $9.50 per hour and were recruited using a U.S. general population representative sampling approach. This method utilized demographic stratification based on U.S. census data [31] to ensure diversity and representativeness in age, ethnicity, and birth-assigned sex.

Five individuals were excluded due to age misreporting (e.g., reporting ages exceeding 400 years) or failing attention checks, and an additional 74 participants were removed due to incomplete item-level responses. As a result, the final dataset analyzed here consisted of complete item-level data from 972 participants (**Table 1**). This final sample of 972 participants was the largest feasible sample size we could opt for and meets established guidelines for participant-to-predictor ratios in latent profile analysis (LPA) [32]. The current sample has been used to examine the factor structure of the CAT-Q in the general population and its cognitive, socio-motivational, and mental health correlates [33, 34], as well as in a SEM investigation of the latent factors underlying the CAT-Q and theoretically related IM measures [24]. Ethical approval for the study was obtained from the Research Ethics Board at the Centre for Addiction and Mental Health, Canada (REB #079/2021).

Procedure and Measures

Participants completed an online survey administered via Qualtrics, which included self-reported measures assessing demographic information, camouflaging and IM constructs, socio-motivational and cognitive features, neurodivergent traits, and mental health. The measures were selected for their strong psychometric properties and theoretical relevance to the transactional IM framework [5]. In this sample, all scales demonstrated acceptable to excellent internal consistency, with Cronbach's alpha values exceeding 0.70.

Demographic variables including age, sex assigned at birth, gender identity, sexual orientation, education level, and ethnicity were collected. Dimensional autistic traits were assessed using the Subthreshold Autism Trait Questionnaire (SATQ) [35] and dimensional ADHD traits were measured using the Adult ADHD Self-Report Scale Part A (ASRS-A) [36].

Camouflaging use was assessed using the CAT-Q [25]. Compensatory strategies, which involve efforts to adopt neurotypical social skills and behaviours despite underlying autistic traits, were measured using the Compensation Checklist [26]. The RSMS [27] was used to assess an individual's ability to monitor and regulate self-presentations in response to social cues. Self-presentation strategies, conceptualized as a suite of tactics to portray the self favourably in social situations, were measured using the SPT scale [11]. The SCS [10] was used to measure the tendency to withhold distressing and socially unfavourable personal information.

Socio-motivational features were assessed using multiple validated self-report measures. The public subscale from the Self-Consciousness Scale (SelfCS-Pub; Scheier & Carver, 1985) measured one's degree of public self-consciousness. Social anxiety was evaluated using the anxiety subscale of the Liebowitz Social Anxiety Scale (LSAS; Liebowitz, 1987). Internalized stigma was measured with the 10-item Shortened Internalized Stigma of Mental Illness Inventory (ISMI-10; [39], adapted for use in the general population: participants identified their most salient minority identity (e.g., gender, ethnicity, sexual

orientation, religion, atypical hobbies or interests, physical/mental disabilities, or others) and rated their experiences of internalized stigma based on this identity. Perceived thwarted belongingness was assessed using the Interpersonal Needs Questionnaire (INQ-TB; Van Orden et al., 2012). Lastly, social comparison orientation was assessed using the Iowa-Netherlands Comparison Orientation Measure (INCOM; Schneider & Schupp, 2014).

Several cognitive features were also assessed via validated self-report measures. Self-perceived cognitive flexibility in adapting to new situations and shifting between tasks or perspectives was measure using the Cognitive Flexibility Scale (CFS) [42]. The Amsterdam Executive Function Inventory (AEFI) was used to assess self-reported overall executive functioning in everyday life [43]. The Emotion Regulation Questionnaire (ERQ) was used to measure emotion regulation capacities [44]. Impulsiveness traits were evaluated using the Barratt Impulsiveness Scale Brief Version (BIS-Brief) [45], but reverse-scored such that higher scores indicate better inhibition of impulsiveness, to be in the same direction as the other cognitive feature measures. The Interpersonal Reactivity Index perspective taking subscale (IRI-PT) was used to measure participants' tendencies to spontaneously adopt the perspective of others [46].

To examine the potential mental health implications of camouflaging and IM, generalized anxiety symptoms were evaluated using the Generalized Anxiety Disorder scale (GAD-7) [47] and depressive symptoms were measured with the Patient Health Questionnaire (PHQ-9) [48]. Ego depletion and cognitive exhaustion were evaluated using the Self-Regulatory Fatigue Scale Short Form (SRF-S) [49]. Lastly, subjective feelings of authenticity was measured using the Kernis-Goldman Authenticity Inventory Short Form (KGAI-SF) [50].

Statistical Analyses Overview

No item-level data were missing in any of the analyses conducted. To address the research objectives, three sequential analyses were performed using the same complete dataset of 972 participants to: (1) identify subgroup profiles based on IM facets, (2)

characterize these subgroups by examining which external (i.e., non-IM-facet) individual traits are associated with the likelihood of subgroup memberships, and (3) test whether the subgroups differ in mental health. Together, this person-centred extension of our previous SEM analysis [24] examines how multiple IM facets exist within individuals and whether the resulting configurations are associated with different individual characteristics and mental health experiences.

Based on Ai et al. (2025) [24], we first calculated 1) a composite "IM intentional use" facet score from the sum of the *z*-standardized scores on the CAT-Q, COMP, SPT, and SCS; and 2) a "IM self-efficacy" facet score from the *z*-standardized sum of the RSMS items. To target theoretically salient constructs, subscale scores were used for specific individual trait measures in place of total scale scores, including the perspective taking (PT) subscale from the IRI, the public self-consciousness (Pub) subscale from the SelfCS, and the thwarted belongingness (TB) subscale from the INQ.

In Analysis 1, we began with the LPA to cluster participants into subgroups based on their score differentiations along the two IM facets. In Analysis 2, we used corrected multinomial logistic regression to characterize these subgroups by assessing whether external individual traits, including cognitive, socio-motivational, and neurodivergent features contribute to subgroup membership differentiation. In Analysis 3, we used corrected distal outcome models to examine whether the subgroups differ in mental health, including depression and anxiety symptoms, fatigue, and authenticity while accounting for classification uncertainty. All analyses were conducted in R, version 4.3.1.

Analysis 1: Can Subgroups be Identified From Patterns of IM Facets?

Method: Latent Profile Analysis (LPA)

The two IM facet scores were used as input features in LPA to determine if participants can be classified into meaningful subgroups using the *R* package tidyLPA [51]. To validate the number of subgroups, we randomly partitioned 55% of the total sample (n=535) as a training subset, ensuring a minimum sample size of 500 for stability. Models specifying increasing numbers of latent profiles were estimated and compared using the Akaike

Information Criterion (AIC) and Bayesian Information Criterion (BIC), with lower values indicating better relative model fit. Model selection was based on the joint consideration of these fit indices together with model parsimony and substantive interpretability of the resulting profiles. Preference was given to a solution that provided improved AIC and BIC values without introducing additional profiles that contributed limited substantive differentiation or were difficult to interpret. The optimal number of profiles was first determined within this training subset.

Once identified, the LPA was re-run to assign subgroup memberships across the full sample (n=972). To assess the robustness of classification, we compared subgroup assignments between the training subset and the full sample [52, 53], specifically examining any reassignments from the 55% sample. This validation step serves as an internal validity check that the identified subgroups were stable and meaningfully differentiated by the two IM facets.

We then descriptively characterized how the subgroups differ using univariate comparisons. First, we assessed subgroup differences on their score patterns along the two within-LPA IM facets. Next, we performed univariate analyses for sociodemographic factors (including age, sex, gender identity, sexual orientation, education, ethnicity, mental health diagnoses, and neurodevelopmental diagnoses) to further characterize the subgroups. Multiple comparisons were adjusted for using the Benjamini–Hochberg procedure, with statistical significance defined at a false-discovery rate (FDR) of $q < .05$ [54].

Results of Analysis 1

Using these two IM facet scores, we identified a three-class model (i.e., three subgroups) for both the 55% subsample and the full sample, based on comparisons of AIC, BIC, and a balance between model interpretability and fit (**Table 2**). To assess the consistency of subgroup classification, we used a Sankey diagram to compare subgroups identified in the 55% subsample with those from the full sample (**Figure 1**). The agreement between subgroup memberships was supported by an Adjusted Rand Index (ARI) of 0.811 and

normalized mutual information (NMI) of 0.647, indicating a moderate to strong degree of similarity. These findings support the robustness of three IM-facet subgroups, with internal subsampling providing evidence of classification stability in the absence of an external dataset.

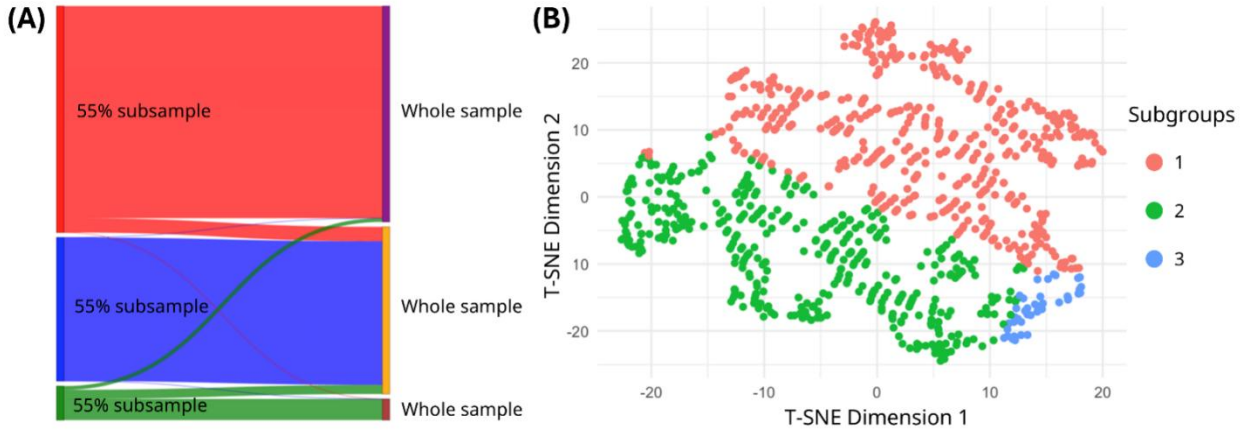


Figure 1

The three subgroups showed different IM facet patterns (**Table 3**). Subgroup 1 exhibited substantially higher IM intentional use than Subgroups 2 (q < .001) and 3 (q < .001), whereas Subgroups 2 and 3 did not differ (q = .075). In contrast, IM self-efficacy was similar between Subgroups 1 and 2 (q = .920) but was markedly lower in Subgroup 3 compared to both Subgroups 1 (q < .001) and 2 (q < .001). Overall, Subgroups 1 and 2 both exhibited high IM self-efficacy but differed in IM intentional use, whereas Subgroups 2 and 3 both exhibited low IM intentional use but differed in IM self-efficacy.

Age differed significantly overall (q < .001), with significant differences across all three pairwise comparisons (all q ≤ .002). Subgroup 1 showed overall lowest age and Subgroup 3 composed of older participants. Sex distribution differed across subgroups (q = .001), driven primarily by differences between Subgroups 1 and 2 (q < .001) and between Subgroups 2 and 3 (q = .022). Subgroups 2 composed of significantly more females than Subgroups 1 and 3. Sexual orientation differed significantly overall (q = .020), with a greater proportion of non-straight participants in Subgroup 1 than 2 (20.3% vs. 12.6%; q = .002), whereas comparisons involving Subgroup 3 were not significant. Gender identity did not remain significance after multiple-comparison adjustment (q = .079). No significant subgroup differences were observed for ethnicity, years of education, presence of a

mental health diagnosis, or presence of a neurodevelopmental diagnosis (all $q > .05$).

Analysis 2: Which Individual Traits Are Associated IM Subgroup Membership?

Methods: Corrected Three-Step Multinomial Logistic Regression

To examine external individual trait correlates of subgroup membership, we conducted corrected three-step multinomial logistic regression analyses while accounting for uncertainty in profile classification. A conventional multinomial logistic regression treats participants' most likely subgroup profile assignment as error-free. However, latent profile membership is probabilistic. Ignoring this classification uncertainty can introduce misclassification bias and may attenuate or otherwise distort associations between external correlates and profile membership [55, 56]. The corrected three-step approach addresses this issue by incorporating information on classification error when estimating associations with external variables, while preserving the original latent profile solution and preventing the predictors from reshaping profile compositions [57, 58]. Given the remaining uncertainty in individual profile assignments, the corrected approach was used in all analyses of external correlates.

Correlates were examined across three domains, each in a separate model: (1) cognitive factors, including overall executive functioning, perspective taking, cognitive flexibility, inhibition, and emotion regulation; (2) socio-motivational factors, including interpersonal needs, internalized stigma, social anxiety, social comparison orientation, and self-consciousness; and (3) neurodivergent traits, including autistic and ADHD traits. The corrected three-step approach estimated the relative likelihood of membership in one profile versus another without re-estimating or altering the latent profile solution. Pairwise profile contrasts were used to identify factors associated with differentiation between profiles. To account for multiple comparisons, *p*-values were adjusted using the Benjamini–Hochberg procedure, with statistical significance defined as $q < .05$ [54].

Results of Analysis 2

There were distinct cognitive, neurodivergent, and socio-motivational trait correlates of profile membership after accounting for classification uncertainty (see **Figure 2** for all

ORs and 95% CI values in each subgroup contrast). Subgroup 1 differed from Subgroup 2 on all individual trait correlates, with the exception of perspective taking. For cognitive traits, Subgroup 1 membership was associated with lower AEFI and BIS-Brief scores but higher CFS and ERQ scores compared to Subgroup 2 (all $q \leq .035$). For socio-motivational traits, higher INQ-TB, ISMI-10, LSAS-anx, INCOM, and SelfCS-Pub scores were each associated with greater likelihood of Subgroup 1 membership (all $q \leq .006$). For neurodivergent traits, higher ASRS-A and SATQ scores were both associated with greater likelihood of Subgroup 1 membership (both $q < .001$).

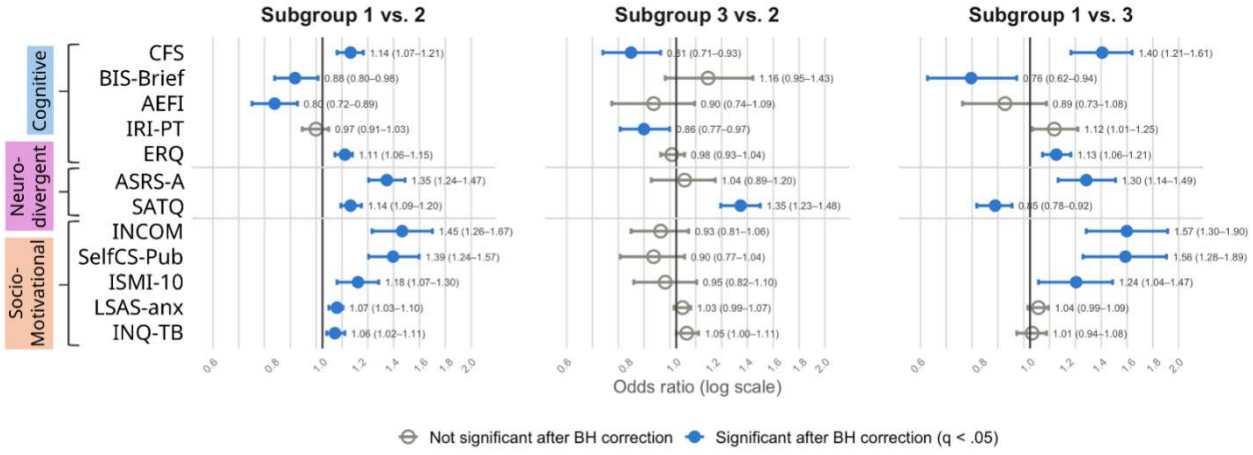


Figure 2

Subgroup 3 was distinguished from Subgroup 2 by only three individual trait correlates. For cognitive traits, higher IRI-PT scores were associated with lower likelihood of Subgroup 3 membership ($q = .019$), as were higher CFS scores ($q = .006$). Among neurodivergent traits, higher SATQ scores were associated with greater likelihood of Subgroup 3 membership ($q < .001$), whereas ASRS-A scores were not significantly associated with this contrast. None of the socio-motivational factors were significantly associated with Subgroup 3 versus Subgroup 2 membership.

For Subgroup 1 versus Subgroup 3, higher CFS ($q < .001$) and ERQ scores ($q < .001$) were associated with greater likelihood of Subgroup 1 membership, whereas higher BIS-Brief scores were associated with lower likelihood ($q = .019$). For socio-motivational traits, higher scores across the ISMI-10 ($q = .031$), INCOM ($q < .001$), and SelfCS-Pub ($q < .001$) were all associated with greater likelihood of Subgroup 1 membership. Both neurodivergent traits distinguished Subgroups 1 and 3: higher ASRS-A scores were

associated with greater likelihood of Subgroup 1 membership ($q < .001$), whereas higher SATQ scores were associated with lower likelihood ($q < .001$).

Overall, the trait correlates distinguished the three subgroups in distinct ways, with Subgroups 1 and 2 differing on the widest range of traits. Compared with Subgroup 2, participants were more likely to be in Subgroup 1 if they showed greater social comparison tendencies, public self-consciousness, internalized stigma, social anxiety, belonging needs, cognitive flexibility, emotion regulation, ADHD traits, and autistic traits. Conversely, compared with Subgroup 1, participants were more likely to be in Subgroup 2 if they showed greater executive functioning and inhibition of impulsivity. Compared with Subgroup 2, participants were more likely to be in Subgroup 3 if they showed higher autistic traits, lower perspective taking, and lower cognitive flexibility. Finally, compared with Subgroup 1, participants were more likely to be in Subgroup 3 if they showed higher autistic traits and inhibition, lower cognitive flexibility, emotion regulation, and ADHD traits, and reduced socio-motivational pressure, namely lower social comparison tendencies, public self-consciousness, and internalized stigma.

Analysis 3: Do IM Subgroup Profiles Differ in Mental Health?

Methods: Corrected Distal Outcome Models

To examine whether the latent profiles differed in mental health, we conducted corrected distal outcome analyses that accounted for uncertainty in profile classification while holding the latent profile solution fixed. Distal mental health variables included depressive symptoms, anxiety symptoms, fatigue, and authenticity. For each mental health variable, profile-specific estimated means and 95% confidence intervals were obtained, followed by pairwise comparisons between profiles to estimate mean differences. To account for multiple comparisons across the pairwise tests, *p*-values were adjusted using the Benjamini–Hochberg procedure, with statistical significance defined as $q < .05$ [54].

Results of Analysis 3

There were significant differences in mental health across the three profiles after accounting for classification uncertainty (**Figure 3**). For fatigue (SRF-S), Subgroup 1 had

the highest estimated mean (M = 53.60, 95% CI [52.40, 54.80]), followed by Subgroups 3 (M = 49.20, 95% CI [43.90, 54.40]) and 2 (M = 40.80, 95% CI [39.60, 41.90]). Subgroup 1 reported significantly higher fatigue than Subgroup 2 (mean difference = 12.90, 95% CI [11.00, 14.70], q < .001), and Subgroup 3 reported significantly higher fatigue than Subgroup 2 (mean difference = 8.41, 95% CI [2.84, 14.00], q = .005). Subgroups 1 and 3 did not differ significantly (q = .136).

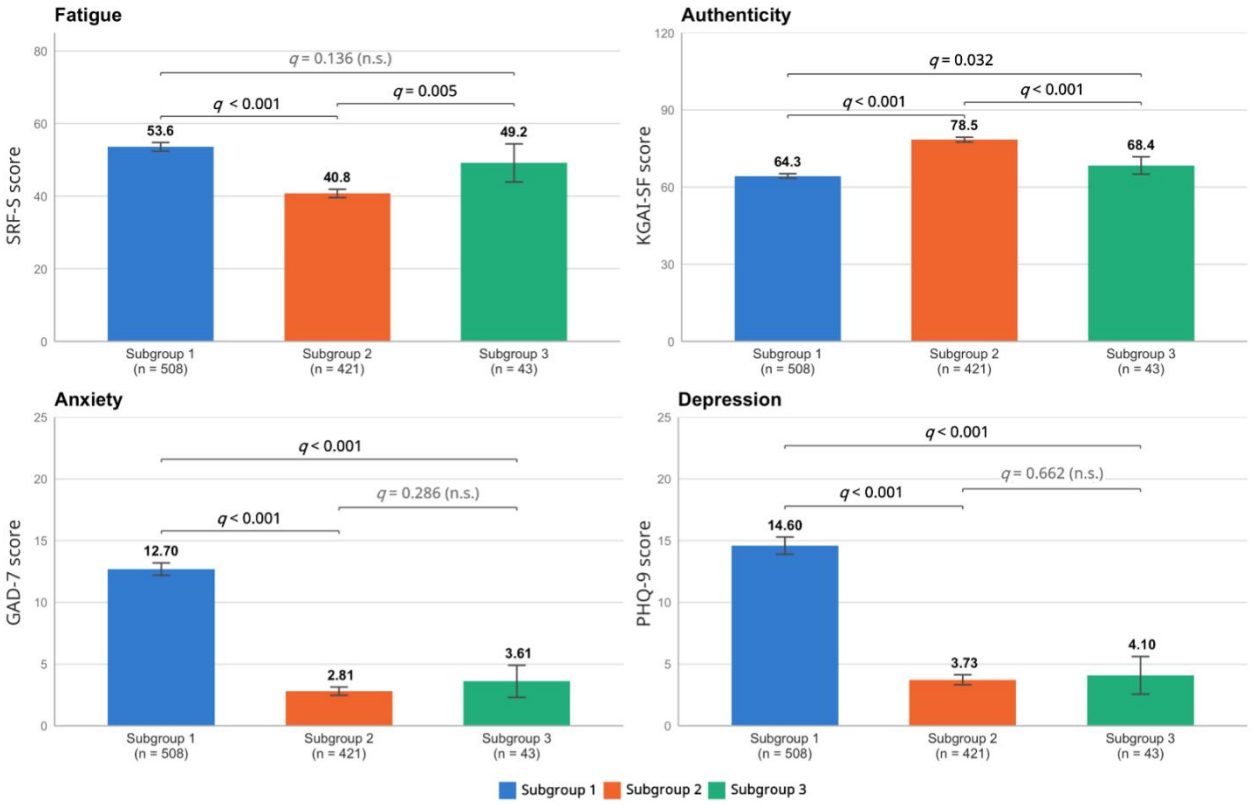


Figure 3

For authenticity (KGAI-SF), Subgroup 2 had the highest estimated mean (M = 78.50, 95% CI [77.50, 79.40]), followed by Subgroups 3 (M = 68.40, 95% CI [65.00, 71.80]) and 1 (M = 64.30, 95% CI [63.50, 65.20]). Subgroup 1 had lower authenticity than Subgroups 2 (mean difference = −14.20, 95% CI [−15.40, −12.90], q < .001) and 3 (mean difference = −4.08, 95% CI [−7.63, −0.53], q = .032), while Subgroup 2 had higher authenticity than Subgroup 3 (mean difference = 10.10, 95% CI [6.51, 13.60], q < .001).

For anxiety symptoms (GAD-7), Subgroup 1 showed substantially higher estimated symptoms (M = 12.70, 95% CI [12.20, 13.20]) than Subgroups 2 (M = 2.81, 95% CI [2.48,

3.15]) and 3 (M = 3.61, 95% CI [2.31, 4.91]). Subgroup 1 reported significantly higher anxiety symptoms than both Subgroups 2 (mean difference = 9.92, 95% CI [9.38, 10.50], q < .001) and 3 (mean difference = 9.13, 95% CI [7.77, 10.50], q < .001). Subgroups 2 and 3 did not significantly differ (q = .286).

A similar pattern was observed for depressive symptoms (PHQ-9). Subgroup 1 showed the highest estimated mean (M = 14.60, 95% CI [13.90, 15.30]) compared with Subgroups 2 (M = 3.73, 95% CI [3.33, 4.14]) and 3 (M = 4.10, 95% CI [2.57, 5.62]). Subgroup 1 reported significantly higher depressive symptoms than Subgroups 2 (mean difference = 10.90, 95% CI [10.20, 11.60], q < .001) and 3 (mean difference = 10.50, 95% CI [8.87, 12.10], q < .001), whereas Subgroups 2 and 3 did not differ significantly (q = .662). Overall, Subgroup 1 was characterized by substantially greater fatigue, anxiety, and depressive symptoms and lower authenticity relative to Subgroup 2. Subgroup 3 generally resembled Subgroup 2 in anxiety and depressive symptoms but showed greater fatigue and lower authenticity.

Discussion

Across the three sequential analyses, we identified three IM subgroups with distinct individual trait associations and mental health patterns. Subgroup 1 combined high IM intentional use with high IM self-efficacy. Furthermore, those who exhibited greater ADHD traits, internalized stigma, social comparison tendencies, and public self-consciousness were more likely to be in Subgroup 1 than the other subgroups. Notably, despite having high IM self-efficacy, Subgroup 1 exhibited the poorest mental health, including substantially greater anxiety and depressive symptoms and lower authenticity than both other subgroups, alongside greater fatigue than Subgroup 2. Subgroup 2 was characterized by similarly high IM self-efficacy but was distinguished from Subgroup 1 by its low IM intentional use. Subgroup 2 showed better mental health, including the lowest fatigue and highest authenticity among all subgroups, with anxiety and depressive symptoms comparable to Subgroup 3. Finally, Subgroup 3 shared Subgroup 2's low IM intentional use but demonstrated markedly lower IM self-efficacy. Participants were more likely to be in Subgroup 3 compared to 2 if they reported greater autistic traits, lower

perspective taking, and lower cognitive flexibility. Their mental health profile was mixed, whereby anxiety and depressive symptoms were similarly low relative to Subgroup 2, yet reported fatigue was higher than Subgroup 2 and at levels comparable to Subgroup 1. Taken together, these person-centred insights allow us to sketch out profiles that begin to explain why camouflaging may be useful for some individuals yet taxing and compelled for others.

Subgroup 1 (high intentional use and high self-efficacy) captures individuals who feel capable of managing impressions yet are pressured to do so. Higher scores on all five socio-motivational measures were linked to greater likelihood of Subgroup 1 membership relative to Subgroup 2. Greater internalized stigma, social comparison orientation, and public self-consciousness also separated Subgroup 1 from 3. Concerns about social evaluation therefore seem especially salient in Subgroup 1. Individuals who more extensively compare themselves with others, attend closely to how they are seen, and internalize negative beliefs about themselves may feel a greater need to manage impressions [2]. Higher ADHD traits likewise also made Subgroup 1 membership more likely relative to both other subgroups, consistent with emerging work on the masking of stigmatized ADHD characteristics [59, 60]. For people in Subgroup 1, feeling skilled at IM appeared neither to offset these pressures nor to accompany better mental health. They reported more anxiety symptoms, depressive symptoms, fatigue, and less authenticity, than the other subgroups. This profile echoes findings in other stigmatized groups, where effective racial code-switching improves how Black employees are evaluated yet fails to protect their psychological wellbeing [61], and where autistic adolescents who compensated more successfully for their social differences reported greater anxiety than those less able to compensate [62]. Social pressures may thus contribute to distress both directly and indirectly through sustained IM use. This person-centred insight is complementary to our earlier variable-centred finding that IM intentional use mediated the associations of internalized stigma and social belonging needs with poorer mental health in the general population [24], and to independent evidence that camouflaging in autistic people mediates the associations of stigma with depression and anxiety [63].

Meanwhile, Subgroup 2 (low intentional use and high self-efficacy) seem to adopt a more selective approach to managing impressions. They reported the lowest fatigue and highest authenticity of the three subgroups and fewer anxiety and depressive symptoms than Subgroup 1. Their lower socio-motivational drives suggest that their IM is less driven by perceived social pressure. They may therefore have the means to construct impressions while seldom facing the evaluative concerns that compel them, drawing on IM to achieve certain contextual goals that reinforce their confidence without requiring persistent use [64]. This IM profile may be less costly to mental health while bringing instrumental benefits to social life when stigma and safety are not the primary drivers of IM [9, 17]. Subgroup 2's higher authenticity also suggests that their IM may demand less extensive or incongruent self-modification than Subgroup 1. In practical terms, then, Subgroup 2 may capture dominant social majority groups, consistent with its significantly smaller proportion of non-straight participants relative to Subgroup 1 (12.6% versus 20.3%). Interestingly, there seems to be no general cognitive advantage for Subgroup 2. Higher overall executive functioning and inhibition were linked to membership in Subgroup 2 over 1, whereas higher cognitive flexibility was linked to Subgroup 1 membership. Comparable IM self-efficacy across the two subgroups may therefore rest on bases beyond cognition that was measured in this study. Subgroup 2's IM self-efficacy may build on the social and instrumental rewards of selective IM, whereas Subgroup 1's IM self-efficacy may build on repeated practice in coping with persistent social pressures.

Subgroup 3 (low intentional use and low self-efficacy) may capture individuals with self-perceived difficulty managing impressions who tend to withdraw from social situations. Lower perspective taking and cognitive flexibility were more associated with membership in Subgroup 3 relative to 2, suggesting that reading others' perspectives and adjusting one's behaviour may feel more demanding for this subgroup [65] and hence diminish IM confidence and engagement [66, 67]. Low self-efficacy may also promote avoidance of situations judged to exceed one's capabilities [64]. Lower social comparison, public self-consciousness, and internalized stigma further differentiated Subgroup 3 from 1, which may reflect reduced social motivation or protective withdrawal from conditions that evoke social pressure, or both. Notably, greater autistic traits made memberships in both

Subgroups 1 and 3 more likely relative to 2, despite the opposite IM profiles of Subgroups 1 and 3. Autistic traits may bear on IM facets differently for different individuals. Social pressure arising from autism stigma may drive IM use in Subgroup 1, whereas the difficulty of IM due to autistic differences may suppress it in Subgroup 3, whose members might avoid demanding interactions or forgo IM in the belief that it will not work.

Socio-demographically, the subgroups did not differ in years of education, mental health diagnoses, neurodevelopmental diagnoses, or ethnicity. The profiles therefore do not appear to proxy any particular social or diagnostic group. The differences that did emerge were, however, consistent with Subgroup 1 facing the greatest social evaluative pressure. Subgroup 1 included proportionally more non-straight participants than Subgroup 2 (20.3% versus 12.6%), with a similar pattern for non-cisgender participants (3.25% versus 0.95%) that did not survive correction for multiple comparisons. Age-wise, Subgroup 1 was the youngest and Subgroup 3 the oldest. Social networks narrow with age through the loss of peripheral rather than close social connections [68], so older participants may encounter fewer situations that call for IM concerns, consistent with our reading of Subgroup 3 as the most withdrawn from demanding and closely scrutinizing social situations. Finally, Subgroup 2 comprised proportionally more birth-assigned female participants than the other two subgroups. One possible interpretation is that across the general population, and particularly in the majority social groups that likely characterize Subgroup 2, contemporary societal expectations incentivize birth-assigned female individuals to restrain IM such as by dampening assertive self-presentation and understating achievements in public [69–71]. Caution is warranted in this interpretation, as this study was unable to disentangle the influences of birth-assigned sex, gender identity, and gender socialization effects. More research is needed to measure gendered expectations on IM directly, alongside influences of biological sex differences, and to test whether they operate differently for people of different sexes and genders in majority versus minoritized social positions.

These findings extend prior variable-centred research by demonstrating that IM intentional use and IM self-efficacy combine into distinct person-level profiles rather than

necessarily co-varying together, indicating that IM constructs, including camouflaging, are better conceptualized as multi-faceted than as unidimensional. Examining these configurations in a representative general population sample captures variation in IM experiences beyond any single diagnostic or minority group and yields new directions for the various areas in which IM is studied. In personnel research, latent profiles of interview IM tactics predict applicant evaluations and hiring outcomes [72], yet those profiles are defined largely by what applicants do. Likewise in emotional labor research, person-centred work has profiled employees by the strategies they use, which differ in exhaustion, job satisfaction, and felt inauthenticity [30]. Incorporating how much regulation is attempted and how capable employees feel as indicators may further clarify who engages in deep versus surface acting and their consequences. In minority stress research, the association between concealment and internalizing symptoms is small and markedly heterogeneous [18]. Profiles separating extent of use from perceived capability of IM offer one account of such heterogeneity. Our findings indicate that feeling capable does not necessarily accompany lower distress when frequent IM use is compelled by social pressure. Social support may therefore be better directed at changing the social conditions that make sustained IM necessary.

Several limitations warrant consideration. First, the cross-sectional design precludes conclusions about causality and temporal ordering. Our interpretation of the subgroups' mental health differences rests on the proposition that IM experiences shape mental health, yet mental health may also shape IM intentional use and IM self-efficacy [17, 73] and, in turn, the subgroup into which a participant was classified. Second, we did not assess performance-based indices of cognitive abilities that may relate to subgroup membership differently. Future work could pair objective cognitive measures with more ecological or experimental designs to test the specific subgroup-differentiating mechanisms signposted here, such as whether cognitive flexibility supports context-selective and strategic IM use. Third, the number of theoretically relevant traits led us to examine correlates in separate models by domain, so the trait associations with profile membership were not adjusted for correlates from other domains. Finally, external samples are needed to establish whether these subgroup profiles and their trait correlates

generalize. The general population-based representative sampling and the correspondence between the 55% subsample and full-sample solutions strengthen confidence in the findings, but independent replications are still needed. Future ecological sampling designs may adjudicate the stability of person-level configurations of IM facets across social settings with differing degrees of evaluative pressure and normative standards.

This study identified three subgroups in the general population defined by configurations of IM intentional use and IM self-efficacy. These subgroups further differed in their individual trait profiles and mental health patterns. Notably, the two subgroups with the poorest and the most favourable mental health reported comparable IM self-efficacy and were instead distinguished primarily by how much they used IM. Our person-centred findings show that IM facets can combine in different ways across individuals with distinct implications, suggesting that each facet should not be examined in isolation. The identified profiles point to candidate factors in cognitive capacities, social pressures, and mental health that may differentiate how groups of people use and experience IM differently. Future longitudinal and context-sensitive research can assess these profiles in everyday social settings to examine their stability across environments and links to social adaptation and wellbeing.

List of Abbreviations

ADHD: attention-deficit/hyperactivity disorder
AEFI: Amsterdam Executive Function Inventory
AIC: Akaike information criterion
ARI: Adjusted Rand index
ASRS-A: Adult ADHD Self-Report Scale, Part A
BIC: Bayesian information criterion
BIS-Brief: Barratt Impulsiveness Scale–Brief Version
CAT-Q: Camouflaging Autistic Traits Questionnaire
CFS: Cognitive Flexibility Scale
CI: confidence interval

ERQ: Emotion Regulation Questionnaire

FDR: false discovery rate

GAD-7: Generalized Anxiety Disorder scale, 7-item

IM: impression management

INCOM: Iowa–Netherlands Comparison Orientation Measure

INQ-TB: Interpersonal Needs Questionnaire, Thwarted Belongingness subscale

IRI-PT: Interpersonal Reactivity Index, Perspective Taking subscale

ISMI-10: Internalized Stigma of Mental Illness Scale, 10-item version

KGAI-SF: Kernis–Goldman Authenticity Inventory–Short Form

LPA: latent profile analysis

LSAS-anx: Liebowitz Social Anxiety Scale, Anxiety subscale

NMI: normalized mutual information

OR: odds ratio

PHQ-9: Patient Health Questionnaire, 9-item

RSMS: Revised Self-Monitoring Scale

SATQ: Subthreshold Autism Trait Questionnaire

SCS: Self-Concealment Scale

SelfCS-Pub: Self-Consciousness Scale, Public Self-Consciousness subscale

SEM: structural equation modelling

SPT: Self-Presentation Tactics Scale

SRF-S: Self-Regulatory Fatigue Scale

Declarations

Ethics approval and consent to participate

Ethical approval for the study was obtained from the Research Ethics Board at the Centre for Addiction and Mental Health, Canada (REB #079/2021). All participants provided informed consent before taking part in the study.

Consent for publication

Not applicable.

Availability of data and materials

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

Competing interests

The authors have no competing interests to declare.

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Authors' contributions

C-H. J. L.: Methodology, Software, Formal Analysis, Writing – Original Draft, Writing – Review & Editing, Visualization; W. A.: Conceptualization, Project Administration, Methodology, Investigation, Data Curation, Formal Analysis, Writing – Original Draft, Writing – Review & Editing, Visualization; M-C. L.: Conceptualization, Project Administration, Methodology, Formal Analysis, Resources, Writing – Original Draft, Writing – Review & Editing, Supervision, Funding Acquisition.

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933 **Table 1: Sociodemographic Information**

	N	*%*
Gender identity		
Men (also referred to as cisgender men)	461	47.4
Women (also referred to as cisgender women)	491	50.5
Gender-diverse [a]	17	1.8
Prefer not to answer	3	0.3
Sex assigned at birth		
Male	469	48.3
Female	503	51.8
Ethnicity		
White	707	72.7
Black or African American	131	13.5
Asian	72	7.4
American or Alaskan Native	9	0.9
Native Hawaiian or Pacific Islander	3	0.3
Prefer not to answer	3	0.3
Other (e.g., Mixed, Hispanic)	47	5.1
Sexual orientation		
Heterosexual	809	83.2
Bisexual	77	7.9
Gay	22	2.3
Lesbian	17	1.8
Pansexual	14	1.4
Not sure or questioning	8	0.8
Queer	7	0.7
Asexual	6	0.6
Two-spirit	2	0.2

Prefer not to say	5	0.5
Other (e.g., Demisexual)	5	0.5
Self-reported clinical diagnosis		
None	516	53.1
Mental health diagnoses (e.g., anxiety, depression, bipolar disorder) [b]	124	12.8
Chronic medical conditions [c]	91	9.4
Neurodevelopmental diagnoses [d]	19	2.0
Substance use disorder	6	0.6
Multi-diagnostic categories [e]	183	18.8
Do not know	16	1.7
Prefer not to answer	11	1.1
Other	6	0.6
Education level		
University/college diploma	371	38.2
High school diploma	290	29.8
Master's degree	224	23.1
Doctoral degree or equivalent	44	4.5
Middle school degree	3	0.3
Primary school degree	2	0.2
Other (e.g., Trade, associate degree)	38	3.9
	M	***SD***
Age (years)	44.2	16.3
Years of education	15.9	3.84

Note. [a] Gender-diverse individuals include trans men, trans women, genderqueer, genderfluid, androgynous, or nonbinary. [b] Mental health diagnoses were self-reported. [c] Chronic medical conditions include health conditions that last for a long time, such as diabetes, asthma, epilepsy, cerebral palsy, or sensory disability. [d] The neurodevelopmental diagnoses category includes individuals reporting being diagnosed with autism, ADHD, or learning disability. [e] The multi-diagnostic categories group includes individuals reporting being diagnosed with multiple diagnostic categories and are exclusive to the rest of individuals reporting only a single diagnostic category. **Abbreviations:** *N* = number; *M* = mean; *SD* = standard deviation.

Table 2: Model Fit Statistics for Latent Profile Analysis

A) Results for 55% sample (N = 535)

Model	Classes	AIC	BIC	Entropy	Prob min	Prob max	N min	N max	BLRT p
1	1	3037.51	3054.64	1.00	1.00	1.00	1.00	1.00	
1	2	3030.83	3060.80	0.40	0.80	0.81	0.48	0.52	
1	3	3007.72	3050.54	0.52	0.67	0.85	0.08	0.56	
1	4	3001.18	3056.85	0.60	0.55	0.88	0.02	0.59	
1	5	3000.06	3068.57	0.54	0.55	0.81	0.02	0.40	
2	1	3037.51	3054.64	1.00	1.00	1.00	1.00	1.00	
2	2	2998.64	3037.18	0.38	0.77	0.83	0.46	0.54	
2	3	3000.91	3060.86	0.42	0.34	0.90	0.11	0.62	
2	4	2992.23	3073.60	0.62	0.45	0.96	0.02	0.69	
2	5	3005.10	3107.87	0.71	0.45	0.93	0.03	0.71	
3	1	3030.25	3051.66	1.00	1.00	1.00	1.00	1.00	
3	2	3027.00	3061.25	0.46	0.81	0.85	0.45	0.55	0.09
3	3	3009.66	3056.76	0.52	0.68	0.85	0.08	0.56	0.01
3	4	2999.45	3059.40	0.62	0.63	0.90	0.02	0.60	0.01

3	5	2997.37	3070.16	0.58	0.55	0.81	0.02	0.41	0.08

B) Results for whole dataset (N = 972)

Model	Classes	AIC	BIC	Entropy	Prob min	Prob max	N min	N max	BLRT p
1	1	5522.83	5542.35	1.00	1.00	1.00	1.00	1.00	
1	2	5495.61	5529.76	0.45	0.81	0.84	0.47	0.53	
1	3	5468.20	5517.00	0.53	0.52	0.83	0.06	0.50	
1	4	5473.31	5536.74	0.40	0.35	0.78	0.06	0.43	
1	5	5479.35	5557.42	0.35	0.33	0.80	0.06	0.42	
2	1	5522.83	5542.35	1.00	1.00	1.00	1.00	1.00	
2	2	5464.24	5508.15	0.42	0.78	0.84	0.42	0.58	
2	3	5461.13	5529.44	0.51	0.36	0.90	0.07	0.66	
2	4	5459.11	5551.82	0.42	0.37	0.79	0.08	0.40	
2	5	5458.72	5575.83	0.51	0.34	0.82	0.06	0.40	
3	1	5501.44	5525.84	1.00	1.00	1.00	1.00	1.00	
3	2	5486.28	5525.31	0.49	0.83	0.86	0.47	0.53	0.01
3	3	5466.61	5520.29	0.58	0.53	0.85	0.04	0.52	0.01

3	4	5472.94	5541.25	0.43	0.37	0.81	0.05	0.44	0.89
3	5	5479.10	5562.05	0.37	0.14	0.84	0.03	0.46	0.92

Note. Model 1 specifies equal variances across profiles with covariances fixed to zero; Model 2 allows variances to vary across profiles with covariances fixed to zero; and Model 3 specifies equal variances and equal covariances across profiles. Entropy ranges from 0 to 1, with higher values indicating greater classification certainty. Min and max posterior probabilities represent, respectively, the minimum and maximum average posterior probabilities for the most likely profile assignment across profiles. Smallest and largest class proportions represent the proportions of participants assigned to the smallest and largest profiles, respectively, based on most likely profile membership. Lower AIC and BIC values indicate better relative model fit. The BLRT compares a k-profile solution with the solution containing one fewer profile; a significant p-value indicates improved fit for the model with the additional profile. **Abbreviations:** AIC = Akaike Information Criterion; BIC = Bayesian Information Criterion; BLRT p = Bootstrap likelihood ratio test p-value; Prob Min = Minimum average class probability; Prob Max = Maximum average class probability; N Min = Smallest class proportion; N max = Largest class proportion.

964 **Table 3: Characteristics of the Three Subgroups**

	Subgroup 1 Mean±SD	Subgroup 2 Mean ±SD	Subgroup 3 Mean ±SD	χ^2	*q*-value	1 vs 2	1 vs 3	2 vs 3
	N = 508	N = 421	N = 43			*q*-value	*q*-value	*q*-value
IM Intentional Use	0.78 ±0.59	-0.87 ±0.55	-0.66 ±0.78	706.62	<0.001	<0.001	<0.001	0.075
IM Self-Efficacy	0.10 ±0.83	0.13 ±0.91	-2.40 ±0.62	121.74	<0.001	0.920	<0.001	<0.001
Age	38.4 ±14.2	49.7 ±16.0	57.3 ±16.3	135.77	<0.001	<0.001	<0.001	0.002
Sex assigned at birth				16.09	0.001	<0.001	0.440	0.022
Male	270	173	26					
Female	238	248	17					
Gender identity				6.47	0.079	0.038	0.480	1.000
Cisgender	492	417	43					
Non-cisgender	16	4	0					
Sexual orientation				9.75	0.020	0.002	0.670	0.650
Straight	405	368	36					
Non-straight	103	53	7					
Education (Years)	16.0 ±4.11	15.8 ±3.51	16.4 ±3.57	2.22	0.356	0.400	0.830	0.830

Ethnicity				3.29	0.309	0.100	0.470	0.980
White	357	317	33					
Non-white	151	104	10					
Mental health diagnoses				2.76	0.335	0.110	0.940	0.790
Yes	163	114	13					
No	345	307	30					
Neurodevelopmental diagnoses				2.07	0.356	0.190	0.920	1.000
Yes	44	26	3					
No	464	395	40					

Note. *q*-values represent *p*-values that have undergone Benjamini–Hochberg correction for multiple comparisons. **Abbreviations:** IM = impression management; SD = standard deviation.