

Understanding camouflaging, stigma, and mental health for autistic people in Japan

Running head: Autism and camouflaging, stigma, and mental health

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Keywords

Autism, Camouflaging, Stigma, Social Identity Theory, Mental health, Japan

Preprint

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Article accepted in Autism in Adulthood on 2/1/2024

1 **Abstract**

2 **Background:** Camouflaging refers to behaviors in which autistic individuals mask their
3 autistic characteristics and “pass” as non-autistic people. It is postulated that camouflaging is
4 a response to stigma, and preliminary evidence supports this hypothesis. However, research
5 on this topic outside of Western countries is limited. This study replicated and extended
6 previous work in the West that examined the relationships between camouflaging, stigma,
7 and mental health of autistic adults, with a Japanese sample.

8 **Methods:** Two-hundred eighty-seven autistic people living in Japan (146 men, 120 women,
9 14 non-binary, 5 other gender identities, 2 preferred not to say; mean age = 37.5 years,
10 standard deviation = 9.8 years) completed an online survey on camouflaging, perceived
11 stigma, coping strategies for stigma, mental well-being, generalized anxiety, social anxiety,
12 and depression. We used hierarchical multiple regression analyses to investigate the
13 relationships between camouflaging and stigma and coping strategies for stigma. Mediation
14 analyses were also employed to examine whether camouflaging mediated the relationships
15 between stigma and autistic people’s mental health.

16 **Results:** Replicating previous work, we found that higher camouflaging was associated with
17 higher perceived stigma. Both coping strategies of hiding/denying and valuing/embracing
18 stigmatized characteristics were positively related to camouflaging. Camouflaging mediated
19 the association of stigma with depression, generalized anxiety, and social anxiety (but not
20 well-being).

21 **Conclusion:** Our findings support the hypothesis that camouflaging is closely related to
22 autism-related stigma and can influence the impact of stigma on mental health. More work
23 around social outreach and addressing autism-related stigma would be beneficial to reduce
24 the negative role of camouflaging.

25

26 **Community Brief**

27 **Why is this an important issue?**

28 Social camouflaging is a behavior through which autistic individuals mask their autistic
29 characteristics to “pass” as non-autistic people. While camouflaging can help autistic
30 individuals adapt to a non-autistic society, it is also associated with fatigue, depression, and
31 anxiety. In 2021, Perry et al. surveyed 223 autistic adults residing primarily in Western
32 countries and suggested that camouflaging might be a strategy to avoid stigma against autism,
33 which can impact their mental health. However, whether their findings are cross-cultural is
34 unclear.

35

36 **What was the purpose of this study?**

37 This study examined whether the results of Perry et al. are applicable to autistic people in
38 Japan. We examined the relationships between camouflaging, stigma, and the mental health
39 of autistic people.

40

41 **What did the researchers do?**

42 We surveyed 287 autistic adults residing in Japan on perceived stigma, camouflaging, mental
43 health, and their coping strategies for managing stigma. We compared our findings with those
44 of Perry et al.

45

46 **What were the results of the study?**

47 (1) The higher the perceived stigma, the higher the extent of camouflaging.

48 (2) Autistic people who try to distance themselves from the autistic community are likely to
49 camouflage. Those with stronger autistic identity and stronger pride in the autistic community
50 are also likely to camouflage.

51 (3) Higher perceived stigma can contribute to higher degrees of depression, generalized
52 anxiety, and social anxiety among autistic individuals, in part because higher stigma is
53 associated with higher degree of camouflaging. Stigma was also associated with poor mental
54 well-being, but camouflaging has limited roles in it.

55

56 **What do these findings add to what was already known?**

57 (1) Camouflaging is closely related to stigma against autism, much like in Perry et al.'s study.
58 There was no significant cross-cultural difference in the degree of influence of stigma on
59 camouflaging.

60 (2) Similar to individuals residing in Western countries, both people who hide/deny their
61 autistic characteristics and who value/embrace their characteristics are likely to camouflage.
62 Regardless of how autistic people perceive their identity, they might have no choice but to
63 continue camouflaging if they feel stigmatized.

64 (3) Camouflaging may play an important role in explaining the relationship between stigma,
65 depression, and generalized and social anxiety. However, these relationships warrant further
66 investigation.

67

68 **What are potential weaknesses in the study?**

69 (1) Compared with the general autistic population, participants could have differed in terms
70 of gender, age, and education. Whether our findings apply to all autistic people is unclear.
71 (2) This study surveyed autistic people only once. Therefore, we could not show whether
72 stigma directly triggers camouflaging.
73 (3) The reliability of the questionnaires quantifying the levels of stigma, coping strategies,
74 and autistic characteristics were questionable.
75 (4) This study did not consider the motives, contexts, and the consequences of camouflaging.
76 The impacts of camouflaging could differ depending on these factors.
77
78 **How will these findings help autistic adults now or in the future?**
79 These findings highlight the importance in reducing stigma against autism and creating an
80 environment in which autistic people can openly reveal their identity.

Background

Autistic people have specific styles of social communication and interaction and unique preference in interests and activities. They often experience mental health problems,¹ with the lifetime prevalence of mental health conditions being 79%, higher than in non-autistic people (41%).^{2,3} Over the past few years, several studies have asserted social camouflaging as a factor associating with the mental health of autistic people.⁴⁻⁸ Social camouflaging refers to behaviors in which autistic people conceal their social differences to get by in a predominantly neurotypical world.^{7,9} It includes several types of behaviors, such as masking autistic behaviors like repetitive hand movements, learning social cues from TV programs, movies, and books, and assimilating with non-autistic people by forcing interaction.^{10,11}

Autistic people are both benefited and disadvantaged by camouflaging. It helps some autistic people achieve social goals, such as establishing close relationships with others, getting jobs or an education, and building their careers.^{7,12,13} These social achievements foster self-confidence and increased feeling of connectedness to others among autistic people.¹² However, camouflaging is also related to substantial costs to autistic people. Qualitative studies have described how camouflaging can contribute to fatigue, burnout, a sense of falsifying their identity, and feelings of “false relationships” with others.^{4,7} Quantitative studies have shown associations between camouflaging and depression, generalized anxiety, social anxiety, and suicidality.^{5,6} Additionally, camouflaging makes autistic traits harder to recognize and could prevent autistic people from receiving a timely diagnosis.^{14,15}

Although the relationship between camouflaging and mental health of autistic people has not been established clearly, in prior qualitative studies, most autistic people emphasized the disadvantages of camouflaging over its advantages.^{7,12,16} Ai et al.¹⁷ proposed that camouflaging is a type of impression management (IM) used by various neurotypes,¹⁸ and suggested the possibility that autistic people are more negatively affected by IM/camouflaging compared with neurotypicals. IM refers to behavior in which people attempt to adjust their behavior to create a particular impression of themselves.^{18,19} IM encourages success in interpersonal relationships,²⁰ while being related to loneliness and lower levels of life satisfaction.²¹ IM (camouflaging) can contribute to mental loads for both autistic and non-autistic individuals;^{22,23} however, in a qualitative study,²³ only autistic individuals mentioned that masking is linked with dangerous thoughts such as suicidal ideation.

Ai et al.¹⁷ noted the reasons why IM/camouflaging has different impacts on autistic people and neurotypicals.

115 First, as members of a stigmatized group, autistic people might be compelled to
116 camouflage. Stigma refers to negative attitudes toward characteristics that do not conform to
117 culturally established norms.²⁴ When members of a certain group perceive stigma that the
118 general population has toward them (public stigma), they develop the awareness of stigma or
119 a belief that others hold stigmatizing thoughts toward one's condition (perceived stigma). As
120 members of the stigmatized group begin to endorse and apply these stigmatized beliefs to
121 themselves (internalized stigma), this is associated with lower self-esteem and lower quality
122 of life.^{25,26} As disclosing a stigmatized identity is associated with further stigmatization, those
123 with stigmatized identities, such as sexual minorities, people with mental illnesses impaired,
124 and people who are HIV positive, try to hide their characteristics.²⁷⁻²⁹ To them, impression
125 management is not behavior aimed at being "better than others," but rather at not being
126 rejected by society, which has been linked with severe depression and reduced quality of
127 life.^{29,30} Moreover, autistic people have long been socially stigmatized and labeled as
128 "dangerous and unstable," "unloved," or "introverted and withdrawn."³¹⁻³³ Further, non-
129 autistic people form more negative first impressions of autistic people and display
130 dehumanizing attitudes toward them.³⁴⁻³⁸ These stigmas can even promote bullying and
131 difficulty finding employment.³⁹ Autistic people might be forced to camouflage to avoid
132 imminent threats, such as violence, which could heighten their anxiety toward the possibility
133 of their camouflage failing, which could, in time, exhaust them.

134 Perry et al.⁸ quantitatively investigated the relationship between perceived stigma and
135 camouflaging using social identity theory (SIT).⁴⁰ Social identity is one's perception of the
136 social group one belongs to. SIT proposes that people are motivated to create, maintain, and
137 protect the positivity of their social identity to maintain positive self-esteem.⁴¹ When a group
138 is stigmatized, and the self-esteem of in-group members is threatened, they could adopt two
139 different coping strategies. Those who use "collective strategies" seek to restore positive
140 social identity, redefining the stigmatized group as valuable and centrally defining aspects of
141 identity.⁴² They resist social norms and values underpinning stigma⁴³ and try to improve the
142 in-group's status by restructuring oppressive cultural and structural systems (e.g., by
143 participating in social movements).⁴⁴ In contrast, those who use "individualistic strategies"
144 try to hide, minimize, or overcome stigmatized characteristics and move from stigmatized in-
145 group to a higher status out-group.⁴² For autistic people, individualistic strategies include
146 masking their autistic characteristics, denying being autistic, and trying to correct their
147 characteristics to become less autistic.^{8,42}

148 Of the two strategies, using individualistic strategies seems similar to camouflaging,
149 although camouflaging does not include minimizing or trying to overcome autistic
150 characteristics. If camouflaging is highly related to using individualistic strategies (a response
151 to stigma), one can infer that perceived stigma facilitates camouflaging. Perry et al.⁸
152 examined the relationship between perceived stigma, individualistic strategies, collective
153 strategies, and camouflaging. Further, they proposed that camouflaging mediates the
154 relationship between stigma and autistic people's mental well-being, considering the idea that
155 camouflaging is a response to stigma. This hypothesis was based on Botha and Frost's⁴⁵
156 proposition that stigma severely impacts autistic individuals' mental well-being and is
157 associated with lower quality of life and lower self-esteem.^{45,46} Botha and Frost⁴⁵ interpreted
158 these negative effects of stigma within the framework of the minority stress model. The
159 model proposes that people with minority identities are exposed to higher stress burdens,
160 such as stigma or lack of social support, resulting in greater physical and mental health
161 problems.⁴⁷ The hypothesis of Perry et al.⁸ suggested that there are indirect pathways wherein
162 stigma affects mental well-being through increased camouflaging, in addition to the direct
163 effects of stigma that the minority stress model posits.

164 Perry et al.⁸ conducted an online survey of 223 autistic adults (130 women, 53 men,
165 39 non-binary or other gender identities, 1 preferred not to say; mean age (M) = 34.19 years,
166 standard deviation (SD) = 11.00) mainly living in the UK and North America. Multiple
167 regression analyses showed that perceived stigma was positively related to camouflaging,
168 supporting their hypothesis that camouflaging is a response to stigma. As for strategy use,
169 individualistic strategy use was positively associated with camouflaging, suggesting that the
170 two are highly related. However, collective strategy use, which could seem to be the opposite
171 of individualistic strategies, was also positively related to camouflaging. Contrary to the
172 hypothesis, camouflaging did not mediate the relationship between stigma and mental well-
173 being. The mediation of camouflaging between stigma and mental health warrants further
174 investigation by considering other aspects of mental health, including depression, generalized
175 anxiety, and social anxiety, which relate to camouflaging.⁶

176 While the study by Perry et al.⁸ is meaningful, being the first to interpret
177 camouflaging in the framework of SIT, it has some limitations. One of these is the regional,
178 racial, and ethnic bias of participants. Most were Caucasians living in the UK or North
179 America—almost none living in Asian countries. Since social-cultural factors differ between
180 Asia and the West, the style in which autistic people react to stigma and the impacts of
181 camouflaging could differ.

182 In East Asia, people emphasize “inter-dependence”; they respect cooperation with
183 others and avoid rejection by not disturbing the harmony of the group.^{45,46} In such
184 environments, people try to find their faults that do not conform to others’ expectations and
185 correct them to achieve self-fulfillment.⁴⁷ Over-adaptation behavior— an attitude in which
186 an individual attempts to conform to the demands of the environment suppressing their
187 personal demands⁴⁸ is a well-known concept in Japan,⁵² and is a good reflection of this
188 nature. In Western countries, “independence” is respected, where the self is a unique reality
189 separate from others.⁴⁹ Under such a self-view, people find attributes to be proud of in
190 themselves and try to gain self-esteem by expressing them outwardly.⁵⁰ Although there are
191 certain criticisms of perceiving national characteristics in this way,^{53,54} it is possible that
192 Asian autistic individuals are more sensitive to stigma and camouflage at a higher level.
193 Indeed, autism-related stigma varies by region, with autistic people in Asian countries
194 more stigmatized than those in Western countries.⁵⁵⁻⁵⁷ Someki et al.⁵⁶ compared the levels
195 of autism-related stigma and knowledge of autism that Japanese and American college
196 students had. Their finding showed that Japanese students exhibited greater social distance
197 and less knowledge than those in U.S. In addition, a multinational comparison study⁵⁸
198 showed that nearly 70% of parents in Japan believe that autistic individuals differ from
199 their peers in intellectual ability. Such beliefs could contribute to higher levels of
200 stigma.^{56,59} Outside Japan, Yu et al.⁵⁷ showed that only 57-65% of Chinese people have
201 enough knowledge about autism, and 38% supported the discrimination against autistic
202 people. In an environment where the level of autism-related stigma is higher and harmony
203 with others is more expected than in the West, perceived stigma might be more facilitative
204 of camouflaging. Moreover, Japanese people prefer indirect forms of communication
205 compared with those in the West.⁶⁰ Tezuka stated that the mutual complementarity between
206 speaker and listener makes Japanese communication effective.⁶¹ This mutual
207 complementarity may make effective camouflaging more difficult as it may require more
208 prudence and mental resources, which may be linked with poor mental well-being. These
209 differences in socio-cultural backgrounds may influence the relationship between stigma,
210 camouflaging, and the mental health of autistic individuals. Therefore, verifying whether
211 the results of Perry et al.⁸ are replicated in Japan—where the cultural background and
212 experience of stigma could differ—and whether the level of stigma, camouflaging, and
213 coping strategies used by autistic people are different, is meaningful.

214 This study is a quasi-replication of Perry et al.⁸ that verifies whether their results are
215 replicated in Japan. We also re-examined the mediation of camouflaging, adding several

216 different mental health questionnaires to the ones they used. Further, we examined whether
217 the degree to which stigma affects camouflaging differs between samples from different
218 cultural backgrounds, specifically the Japanese and Western cultures.

219 We hypothesized that, in Japan, (1) perceived stigma is more positively related to
220 camouflaging than in the West; (2) both individualistic and collective strategy use positively
221 relate to camouflaging; (3) and camouflaging mediates the relationship between stigma and
222 autistic people's mental health (mental well-being, depression, generalized anxiety, and
223 social anxiety).

224

225

Methods

226 Participants

227 Individuals who self-reported receiving a diagnosis of autism by physicians according to the
228 Diagnostic and Statistical Manual of Mental Disorders fifth edition⁶² were eligible to
229 participate. Since the inclusion criteria were verified only by participants' self-reports, we
230 also used the Japanese version of the Autism-Spectrum Quotient 10-item short version⁶³ to
231 measure autistic characteristics, and excluded those who scored below the cut-off point of 7
232 ($n = 163$ excluded). We also excluded those who had received the diagnosis from someone
233 other than a physician¹ or had self-diagnosed (none were excluded). Thus, there were 287
234 participants.

235 To recruit participants, we sent one email newsletter to individuals who belonged to a
236 private firm's research panel and another to individuals registered with a support facility that
237 helped autistic people find employment. We recruited participants and collected data between
238 January and March 2022. We obtained informed consent from all participants.

239 Of the participants, 146 (50.9%), 120 (41.8%), and 14 (4.9%) identified as men,
240 women, and non-binary, respectively. Five participants (1.7%) used other terminologies to
241 describe their gender, and two (0.3%) preferred not to disclose. Participants' ages ranged
242 from 20 to 63 years ($M = 37.5$ years, $SD = 9.8$ years), and their age at diagnosis ranged from
243 1 to 60 years ($M = 31.8$ years, $SD = 12.2$ years). Most participants ($n = 280$, 97.6%) reported
244 being Asian, followed by those who reported being White ($n = 4$, 1.4%), Hispanic ($n = 1$,
245 0.3%), mixed race ($n = 1$, 0.3%), and other ethnicities ($n = 1$, 0.3%) . Regarding the highest
246 level of education, most participants had a bachelor's degree from a four-year college ($n =$

¹ Since only physicians can make the official diagnosis in Japan, this study excluded those who received the diagnosis from someone other than a physician.

247 136, 47.4%), followed by those who had a middle or high school diploma (n = 73, 25.4%), a
248 technical or junior college degree (n = 38, 13.2%), other educational backgrounds (n = 28,
249 9.6%), and a master's degree or doctorate (n = 12, 4.2%). All participants resided in Japan,
250 and 177 (61.7%) were employed at the time of participation.

251

252 **Materials and procedure**

253 This study was approved by the Research Ethics Committee at Chiba University (Reference
254 No: M10319). This study did not include autistic consultation, engagement, or coproduction.

255 Potential participants accessed the research website and were screened to check
256 whether they were eligible for the study. The questionnaires were presented in the order
257 mentioned below. Those who scored below the cut-off on the AQ-J-10 did not complete the
258 questionnaires after that point.

259 In selecting the scales, we chose the same scale as Perry et al.⁸ when possible. In
260 quantifying participants' autistic traits, we chose the AQ-J-10 because the scale that Perry et
261 al.⁸ used (Ritvo Autism and Asperger Diagnostic Scale)⁶⁴ was not validated and standardized
262 in Japanese. Moreover, in the absence of similar measures in Japanese, we translated the
263 stigma consciousness scale,⁶⁵ the individualistic strategy use scale,⁴² and the collective
264 strategy use scale,⁴² which were used by Perry et al.⁸ When scales had to be translated, the
265 Japanese version was back-translated and verified by native English speakers. The translated
266 versions of the scales are shown in Supplemental material 1.

267

268 **Demographic information**

269 Participants first provided their demographic information, including their age, age at
270 diagnosis, gender, ethnicity, residency, highest level of education, and employment status.

271

272 **Autism-Spectrum Quotient 10-item short version (AQ-J-10)**

273 The AQ-J-10 is a short version of the Autism Quotient, which quantifies autistic traits.^{63,66}
274 Participants rated 10 items, such as "I prefer to do things with others rather than on my own,"
275 on a four-point Likert scale. Participants scored zero or one point per sentence, depending on
276 their ratings. The total score could range between 0 and 10, and higher scores indicated
277 higher levels of autistic traits. With a cut-off value of 7, the AQ-J-10 has a high negative
278 predictive value (0.97) for autism without intellectual disability.⁶³ The scale had poor internal
279 consistency in this study ($\alpha = 0.448$).

280

281 **Patient Health Questionnaire-9–Japanese version**

282 The Patient Health Questionnaire-9 (PHQ-9)⁶⁷ is a nine-item, self-administered measure to
283 assess depressive symptoms in the past two weeks. Participants rated each item (e.g., “Little
284 interest or pleasure in doing things”) on a Likert scale of 0 (not at all) to 3 (nearly every day).
285 The total score could range from 0 to 27, with higher scores suggesting more depressive
286 symptoms. Ten is the threshold for the presence of major depressive disorder.⁶⁷ We used the
287 PHQ-9 Japanese version developed by Muramatsu et al.⁶⁸ The scale had good internal
288 consistency in this study ($\alpha = 0.867$).

289

290 **Generalized Anxiety Disorder-7–Japanese version**

291 The General Anxiety Disorder-7 (GAD-7)⁶⁹ comprises seven items related to generalized
292 anxiety symptoms. Participants rated items such as “Feeling nervous, anxious, or on edge” on
293 the same Likert scale as the PHQ-9. Total scores could range from 0 to 21, with 10 as the cut-
294 off for the presence of generalized anxiety disorder. We used the Japanese version of the
295 GAD-7.⁷⁰ The scale had good internal consistency in this study ($\alpha = 0.899$).

296

297 **Liebowitz Social Anxiety Scale–Japanese version**

298 The Liebowitz Social Anxiety Scale (LSAS)⁷¹ is a 24-item self-reported measure of social
299 anxiety symptoms over the past week. Items were related to various social situations, and
300 participants rated the extent that they feared and avoided the situation separately on a Likert
301 scale of 0 to 3. The total scores could range between 0 and 144, and higher scores suggested
302 more social anxiety. Asakura et al.⁷² developed and validated the Japanese version. The scale
303 had excellent internal consistency in this study ($\alpha = 0.972$).

304

305 **Camouflaging Autistic Traits Questionnaire (CAT-Q)–Japanese version**

306 This 25-item measure was designed to quantify camouflaging for autistic people.¹¹ The scale
307 has three subscales: masking, compensation, and assimilation. The masking subscale contains
308 items related to hiding autistic characteristics and pretending to non-autistic (e.g., “I always
309 think about the impression I make on other people”). The compensation subscale includes
310 items regarding strategies to compensate for difficulties in social situations (e.g., “When I am
311 interacting with someone, I deliberately copy their body language or facial expressions”).
312 Assimilation contains strategies to fit in with others in social situations (e.g., “In social
313 situations, I feel like I’m ‘performing’ rather than being myself.”). Items were rated on a
314 seven-point scale (*strongly disagree* to *strongly agree*). Total scores range from 25 to 175.

315 Those with higher scores camouflaged more. The Japanese version of Hongo et al.⁷³ was
316 reliable and valid, and the scale had good internal consistency in this study ($\alpha = 0.888$).

317

318 **Warwick-Edinburgh Mental Wellbeing Scale–Japanese version**

319 Participants' mental well-being was assessed using the Warwick-Edinburgh Mental
320 Wellbeing Scale (WEMWBS), which has 14 items.⁷⁴ Participants rated items such as “I've
321 been feeling relaxed” on a five-point Likert scale ranging from “none of the time” to “all of
322 the time.” The total scores could be between 14 and 70, with higher scores suggesting more
323 positive mental well-being. We used the WEMWBS's Japanese version that Suganuma et
324 al.⁷⁵ developed, which has excellent internal consistency ($\alpha = 0.905$).

325

326 **Stigma consciousness scale**

327 The stigma consciousness scale comprised five items related to perceived stigma⁶⁵ adapted by
328 Perry et al.⁸ for autistic people. Participants rated items such as “Stereotypes about autistic
329 people have not affected me personally” (reversed item) and “Most people do not judge
330 someone based on their being autistic” (reversed) on a Likert scale of 0 (strongly disagree) to
331 3 (strongly agree). The total score could be between 0 and 15, with higher scores indicating a
332 stronger consciousness of social stigma. Since there was no Japanese version of this scale, we
333 translated it into Japanese. It had moderate internal consistency ($\alpha = 0.606$).

334

335 **Individualistic strategy use**

336 We translated the 13-item scale of individualistic strategy use⁴² adapted for autistic people.⁸
337 Participants reported the extent that they agreed with each item on a seven-point Likert scale.
338 The scale includes three subscales: “concealing status” (e.g., “I try to hide my autistic traits
339 from others in certain situations”), “deny/minimize” (e.g., “I don't think of myself as an
340 autistic person.”), and “attempt to overcome” (e.g., “I do not need to be “cured” of autism;”
341 reversed item). The total score could be between 13 and 91, and those with higher scores used
342 individualistic strategies more frequently. It had poor internal consistency ($\alpha = 0.598$).

343

344

345

346 **Collective Strategy Use**

347 We modified and translated the collective strategy use scale⁴² into Japanese.⁸ The scale
348 comprised 13 items related to pride in the autistic community, “I have a lot of pride in the

349 autistic community”, or social change activism, “I am an autistic rights activist.” Each item
350 was rated on a seven-point agreement scale, with total scores ranging from 13 to 91. Those
351 who scored high used collective strategies more frequently. It had excellent internal
352 consistency ($\alpha = 0.905$).

353

354 **Design and data analysis**

355 Being a quasi-replication of Perry et al.⁸, this study had a cross-sectional correlational
356 design. We performed all statistical analyses using SPSS statistics version 28.0 and mediation
357 analyses using PROCESS add-on version 3.3.⁷⁶ For hierarchical linear multiple regression
358 analyses, we created two dummy codes for gender: “male versus female” and “male versus
359 non-binary.” We set male as the reference category and coded it zero because most
360 participants identified as male.

361 To test hypothesis one, we performed a hierarchical linear multiple regression
362 analysis to test whether perceived stigma significantly correlated with camouflaging. We set
363 camouflaging as the dependent variable and entered demographic variables (gender, age, age
364 at diagnosis, and autistic traits) as independent variables at Step 1, and perceived stigma at
365 Step 2. All demographic variables have been previously found to be related to camouflaging
366 and were therefore controlled for in our analyses.⁷⁷ In examining the extent that stigma
367 affects camouflaging, we compared Cohen’s f^2 of stigma in our study with that of Perry et al.
368 ⁸ We considered f^2 values of .02 as a small effect, .15 as a medium effect, and .35 as a large
369 effect.⁷⁸ For comparison, we used the values showed in Perry et al.⁸ since we did not have
370 access to the dataset used by them.

371 We tested hypothesis 2 by performing a hierarchical linear multiple regression
372 analysis with camouflaging as the dependent variable. We entered demographic variables as
373 above at Step 1 and individualistic and collective strategy use at Step 2 as independent
374 variables.

375 The “masking” subscale of the CAT-Q and the “concealing status” subscale of the
376 individualistic strategy scale contain similar items; thus, the degree of correlation between the
377 two may be affected by the overlap of items between the scales. To examine this effect, we
378 also performed the above analysis replacing the individualistic strategy scale with that
379 without the “concealing status” subscale.

380 To test hypothesis 3, we used four mediation models. In all models, stigma was the
381 independent variable, and camouflaging was the mediating variable. The dependent variables

382 were mental well-being (Model 1), depression (Model 2), generalized anxiety (Model 3), and
383 social anxiety (Model 4).

384 As this was a quasi-replication study, we employed the same analysis method as
385 Perry et al.⁸ However, in testing Hypothesis 1 and 2, we used hierarchical multiple regression
386 analysis instead of multiple regression analysis, to determine how much variance in
387 camouflaging was accounted for by perceived stigma or coping strategies. We considered
388 two-tailed p-values of .05 as significant and 95% confidence intervals (CIs) as appropriate.
389 Using G*power and referring to the effect size in Perry et al.⁸, the adequate sample size for
390 hierarchical multiple regression analyses ($f^2 = 0.06$, $\alpha = .05$, $1-\beta = 0.80$) was 234. The
391 variance inflation factor was between 1.05 and 3.61 for hierarchical multiple regression
392 analyses, indicating no multicollinearity.

393

394 **Results**

395 All variables used in the analysis were normally distributed with skewness and
396 kurtosis in the range of -2 to 2.⁷⁹ Levene's tests showed that there was homogeneity of
397 variance across all variables. For mediation analyses, variables were normally distributed,
398 and variance for all variables was homogeneous. Further, no missing values existed. The
399 average, SD, range, kurtosis, and skewness of all variables are presented in Table 1. The
400 correlation matrix is also presented in Supplemental Table 1.

401

402 [Insert Table 1 here]

403

404 **Hypothesis 1: Perceived stigma and camouflaging**

405 The results of hierarchical multiple regression analysis are presented in Table 2. In Steps 1
406 and 2, the model accounted for 9.2 and 17.2% of the variation in camouflaging, respectively.
407 The likelihood ratio test showed that the goodness-of-fit model of Step 2 was significantly
408 better than that of Step 1 (likelihood ratio $\chi^2(1) = 26.30$, $p < .001$). Stigma was a significant
409 predictor of camouflaging; greater stigma scores suggested greater camouflaging. Moreover,
410 identifying as female or non-binary, younger age, and older age at diagnosis were
411 significantly related to higher degree of camouflaging. Cohen's f^2 of stigma (0.09) was small,
412 and comparable to that in Perry et al.⁸ (0.07).

413

414 [Insert Table 2 here]

415

416 **Hypothesis 2: Camouflaging and strategy use**

417 The results of hierarchical multiple regression analysis are presented in Table 3A. In Steps 1
418 and 2, the model accounted for 9.2% and 19.4% of the variation in camouflaging,
419 respectively. The likelihood ratio test showed that the goodness-of-fit model of Step 2 was
420 significantly better than that of Step 1 (likelihood ratio $\chi^2(2) = 33.07, p < .001$). Greater
421 individual and collective strategy use and identifying female or non-binary were significant
422 predictors of more camouflaging.

423 **The results of the same analysis replacing the individualistic strategy use scale with**
424 **that without “concealing status” subscale is shown in Table 3B.** In Steps 1 and 2, the model
425 accounted for 9.2% and 9.9% of the variation in camouflaging, respectively. The likelihood
426 ratio test revealed that the goodness-of-fit model of Step 2 was not significantly better than
427 that of Step 1 (likelihood ratio $\chi^2(2) = 2.13, p = .345$). Older age at diagnosis and identifying
428 as female or non-binary were significant predictors of more camouflaging. However, the
429 correlation between the CAT-Q and the individualistic strategy use scale (without the
430 “concealing status” subscale) was not significant.

431

432 [Insert Table 3A and 3B here]

433

434 **Hypothesis 3: Camouflaging, stigma, and the mental health of autistic people**

435 Regarding Model 1 (stigma, camouflaging, and mental well-being), the total effect was
436 significant ($b = -1.08, t(285) = 23.0, p < .001$). The path between stigma and camouflaging
437 was significant ($b = 2.35, t(285) = 4.95, p < .001$); however, the path between camouflaging
438 and well-being was not ($b = -0.001, t(284) = 0.05, p = .96$). The direct effect was significant
439 ($b = -1.08, t(284) = 4.81, p < .001$); however, there was no significant indirect effect, with the
440 95% CI including zero (0.67 to -0.13). Thus, stigma affected autistic people’s mental well-
441 being directly, and camouflaging did not mediate this relationship. Further, camouflaging
442 were not related to mental well-being significantly.

443 Regarding Model 2 (stigma, camouflaging, and depression), the total effect was
444 significant ($b = 0.46, t(285) = 3.20, p < .001$). The direct effect was not significant ($b = 0.28,$
445 $t(284) = 1.96, p = .05$), while the indirect effect was significant (95% CI: 0.06–0.07). Thus,
446 camouflaging mediated the relationship between stigma and depression completely.

447 Regarding Model 3 (stigma, camouflaging, and generalized anxiety), mediation
448 analyses showed a significant total effect ($b = 0.54$, $t(285) = 4.36$, $p < .001$). Both the direct
449 effect ($b = 0.35$, $t(284) = 2.89$, $p = .004$) and the indirect effect (95% CI: 0.05–0.09) were
450 significant. Thus, camouflaging partially mediated the relationship between stigma and
451 generalized anxiety.

452 Regarding Model 4 (stigma, camouflaging, and social anxiety), the total effect was
453 significant ($b = 3.72$, $t(285) = 5.10$, $p < .001$). Both the direct effect ($b = 2.89$, $t(284) = 3.90$,
454 $p < .01$) and the indirect effect were significant (95% CI: 0.29–0.32). Thus, camouflaging
455 partially mediated the effect of stigma on social anxiety.
456 Figures 1A–1D present the mediation diagram of each model.

457

458 **Discussion**

459 This study examined the relationship between perceived stigma, camouflaging, and the
460 mental health of Japanese autistic people using the SIT framework. Replicating Perry et al.⁸,
461 we found that higher perceived stigma contributed to more camouflaging, and both
462 individualistic and collective strategy use were positively related to camouflaging.
463 Camouflaging did not mediate the relationship between stigma and mental well-being;
464 however, it mediated the relationships between stigma and depression, generalized anxiety,
465 and social anxiety. One point to note is that these findings should be interpreted with caution
466 because the internal consistencies of the three questionnaires in this study (the AQ-J-10, the
467 stigma consciousness scale and the individualistic strategy use scale) are not good.

468 Although causal relationships cannot be inferred from our findings, the results support
469 the hypothesis that camouflaging is a response to stigma. In perceiving stigma, autistic people
470 might be motivated to camouflage and avoid bullying, abuse, or rejection by others.^{7,35} This
471 finding aligns with that in Perry et al.⁸ and previous discussions.^{4,80} The fact that stigma is
472 closely related to camouflaging is of great importance. Often, support available for autistic
473 individuals is based on the biomedical model and focuses on reducing “maladaptive
474 behaviors” by intervening with being autistic.^{81,82} Contrastingly, the current findings support
475 the view of the social model, which considers the difficulties of people with disabilities to be
476 due to mismatches between their characteristics and the environment.⁸³ To reduce the
477 negative role of camouflaging, it is essential to create societies where autistic people are
478 accepted as they are and not forced to become “less autistic.” Although there is still no
479 consistent knowledge of factors associated with reducing autism-related stigma, several
480 previous studies have suggested that accurate knowledge about autism and positive contact

481 experiences with autistic individuals could reduce stigma.^{84,85} In Japan, where knowledge of
482 autism is significantly less than in the West,⁵⁶ education about autism will play an especially
483 important role.

484 We hypothesized that in Japan, where the level of autism-related stigma is higher and
485 inter-dependence is emphasized, stigma is more facilitative of camouflaging. Contrary to our
486 hypothesis, there was no difference in the effect size of perceived stigma on the level of
487 camouflaging between Japan and the West. This finding showed that the relationship between
488 stigma and camouflaging could be generalizable across different cultural groups.
489 Investigations of camouflaging outside of the West have only just begun. In addition, there is
490 still insufficient insight into the differences in how people perceive autism and their attitudes
491 toward autistic individuals depending on their cultural backgrounds, such as an emphasis on
492 inter-dependence. Further studies are warranted to examine the differences in contributing
493 factors of camouflaging owing to cultural differences.

494 Regarding hypothesis 2, individualistic strategy use was a positive predictor of
495 camouflaging, supporting the hypothesis that camouflaging is highly related to individualistic
496 strategies and a response to stigma. Further, collective strategy use- a concept that
497 theoretically opposes individualistic strategy use- was also positively related to
498 camouflaging: people with stronger and more positive autistic identity were more likely to
499 camouflage. This finding aligned with that of Perry et al.⁸, although Cohen's f^2 in our sample
500 (0.017) was relatively smaller than that in the Western sample (0.042). Further study is
501 required to determine why collective strategy use positively predicted camouflaging;
502 however, one possibility is the "double bind" in which autistic people are caught. For
503 example, using mediation analysis, Cage and Troxell-Whitman⁸⁶ showed that higher autistic
504 identity contributed to less camouflaging via autistic individuals disclosing their diagnosis.
505 However, when disclosure was controlled for, higher autistic identity directly increased
506 camouflaging. This competitive mediation suggests that people with higher autistic identity
507 have a dilemma; they want to disclose their diagnosis and stop camouflaging; however, it is
508 hard to do so. Cage and Troxell-Whitman⁸⁶ cited fear of stigma as a reason they cannot stop
509 camouflaging.

510 Disclosure of autistic status could foster to further stigma^{45,87} and negative labeling.³³
511 In an environment wherein disclosing an autistic diagnosis is unsafe, autistic people could
512 have no choice but continue to camouflage, even if they are proud of being autistic.

513 Notably, those who mostly use collective strategies might have different motivations
514 to camouflage than those who use individualistic strategies. They might perceive, but do not

515 internalize autism-related stigma, and consider camouflaging simply as a tool to get along
516 with others. Therefore, the psychological burden of camouflaging could be relatively small
517 for them. The finding that collective strategy use was positively correlated to positive well-
518 being in this study suggests this. This study did not consider differences in the impacts of
519 camouflaging by motives, and further study is needed.

520 As for hypothesis 3, perceived stigma was significantly and negatively related to
521 mental well-being, depression, generalized anxiety, and social anxiety for autistic people.
522 Moreover, camouflaging mediated the relationship of stigma with depression, generalized
523 anxiety, and social anxiety completely or partially. This suggests that an indirect pathway
524 exists in which stigma impairs autistic people's mental health, although stigma also directly
525 affects generalized anxiety and social anxiety. These findings offer a new perspective on
526 interpreting mental health problems in autistic individuals, supporting the minority stress
527 model.⁴⁵

528 Contrastingly, we found that camouflaging did not mediate the relationship between
529 stigma and mental well-being. Moreover, camouflaging was not related to mental well-being
530 significantly in our analyses. One possible reason for camouflaging not being related to
531 mental well-being is that well-being is a more general concept that includes positive feelings,
532 life satisfaction, autonomy, good relationships with others, and positive self-esteem.^{88,89}
533 Qualitative studies have suggested that camouflaging links to a sense of career
534 accomplishment, good relationships with colleagues and friends, and pride in masking
535 skills^{4,12,16} while contributing to depression and exhaustion,^{4,6} thus undermining any
536 perceived "successful camouflaging" and off-setting any possible benefits of masking.⁹⁰
537 Another reason is that we used a standardized measure of well-being that could not fully
538 capture autistic-specific aspects of well-being, which could differ from neuro-normative
539 conceptualizations.⁹¹ Our finding on well-being is consistent with that in Perry et al.⁸,
540 contrary to the hypothesis that camouflaging is negatively related to mental well-being in
541 Japan, where camouflaging requires greater mental resources. The relationship between
542 camouflaging and the overall well-being of autistic individuals has rarely been examined and
543 warrants further investigation. It is also important to consider whether these offsets occur
544 within or between individuals.

545

546 **Limitations**

547 This study had several limitations. First, because this was an online survey, we could not
548 ascertain whether participants had a formal diagnosis of autism. One participant reported the

549 age at diagnosis as one year, but it is difficult to make a diagnosis of autism at this age. To
550 verify participants' level of autistic traits we used the AQ-J-10, which has problems with
551 internal reliability although it has a high diagnostic concordance rate.^{63,92} There were 163
552 participants in this study who were excluded for not exceeding the AQ-J-10 cut-off, which
553 might have compromised study generalizability. Additionally, participants were mostly
554 college educated, employed at the time of participation, and had used the support facility.
555 Therefore, the results may not be generalizable to the population. Finally, in this study,
556 identifying as non-binary was positively correlated with camouflaging. However, the sample
557 size of non-binary individuals (n = 14) is relatively small. Camouflaging among non-binary
558 autistic people has been reported,^{6,16} but the sample size of non-binary people for those
559 studies had been small and the findings inconsistent. Future studies with a larger sample of
560 non-binary participants should address the relationship between the levels of camouflaging
561 and self-identified gender.

562 Second, the internal consistencies of the three questionnaires (the AQ-J-10, the stigma
563 consciousness scale, and the individualistic strategy use scale) in this study were not good:
564 Cronbach's α s were 0.448, 0.606, and 0.598, respectively. For the AQ-J-10, we excluded
565 participants who did not meet the cut-off of seven. When the range of a variable is limited by
566 truncating participants below a certain score, correlations between variables will be
567 calculated lower than they are. Cronbach's alpha is based on the correlation between each
568 item, so the alpha might be calculated lower than it actually was.^{93,94} As for the stigma
569 consciousness scale and the individualistic strategy use scale, α s were not unacceptable,^{95,96}
570 but the issues of internal consistency in these questionnaires may have affected our findings.
571 As a replication study, we used the same scale as Perry et al.⁸ developed in Western
572 countries. However, scales quantifying the levels of stigma and individualistic strategy use
573 that are unique to Japanese autistic people, in collaboration with Japanese autistic researchers
574 and/or advisors, should be developed.

575 Third, in the analysis testing hypothesis 2, individualistic strategy use was correlated
576 with the degree of camouflaging significantly, but when the "concealing status" subscale was
577 removed from the individualistic strategy use scale, the correlation was not significant. The
578 "concealing status" subscale contains similar items with the "masking" subscale of the CAT-
579 Q; thus, the significant correlation between camouflaging and individualistic strategy use
580 might be due to overlapping items of the CAT-Q and the "concealing status" subscale. Since
581 camouflaging and individualistic strategy might be similar concepts, it is natural for both

582 scales to include similar items. However, the overlap of items might result in significant
583 correlation in the multiple regression analysis.

584 Fourth, this study employed a cross-sectional design, and we could not clarify causal
585 relationships between variables. There are criticisms that most studies on camouflaging are
586 cross-sectional,^{77,97-99} and some studies suggest reverse causality between some variables
587 (e.g., pre-existing anxiety could promote camouflaging; camouflaging reaffirms the stigma
588 that autistic characteristics must be hidden).^{98,100} To resolve this limitation of cross-sectional
589 studies, longitudinal studies assessing perceived stigma, camouflaging, and mental health of
590 autistic individuals are needed.

591 Finally, examining the relationships between camouflaging and mental health, we
592 focused on camouflaging behavior itself and did not consider contexts for camouflaging or
593 consequences of camouflaging. Some autistic individuals might consider camouflaging
594 simply a skill for survival, and camouflage consciously. They might camouflage only in
595 certain situations, such as at job interviews, and be themselves around people who accept
596 their autistic characteristics. In that case, they might gain more confidence in their
597 adaptability and more positive well-being by camouflaging. However, for those who believe
598 that they must be “normal” and camouflage unknowingly, camouflaging would have
599 significant negative impacts. They might mask their characteristics at every turn, even with
600 their families. In addition, whether camouflaging works effectively may also affect the
601 relationships between camouflaging and mental health. If camouflaging does not result in
602 good social adaptation, it will not promote social well-being or resilience,¹⁰¹ but rather will
603 only consume mental resources. The CAT-Q does not take the contexts and effectiveness of
604 camouflaging into account, and this study did not involve scales that evaluate social
605 adaptation or social well-being. Researchers recently began studying the factors influencing
606 the impact of camouflaging,¹⁶ and further quantitative research is needed.

607

608 **Conclusion**

609 This study replicated the findings in Perry et al.⁸ It showed that camouflaging is closely
610 related to stigma among Japanese autistic adults. Beyond replication, it also showed that
611 camouflaging mediates the association of stigma with depression, generalized anxiety, and
612 social anxiety. These findings show how stigma is deeply problematic for autistic people
613 across different cultural groups and highlight the importance of focusing on the social
614 environment to reduce stigma and the negative role of camouflaging on mental health of
615 autistic people.

616

617 **Acknowledgments**

618 We are grateful to Yoshihito Ozawa and Yuki Shiko for their helpful comments and
619 assistance in the statistical analysis. We also thank Editage (www.editage.com) for English
620 language editing.

621

622 **Author contribution statement**

623 **Masaki Tamura:** Conceptualization (equal); Methodology (lead); Resources (lead);
624 Investigation (lead); Formal analysis (lead); Writing–original draft (lead). **Eilidh Cage:**
625 Conceptualization (equal); Methodology (equal); Writing-Review and Editing (equal). **Ella**
626 **Perry:** Conceptualization (lead); Methodology (equal); Resource (supporting); Writing-
627 Review and Editing (equal). **Minako Hongo:** Writing-Review and Editing (equal). **Toru**
628 **Takahashi:** Formal analysis (equal). **Mikuko Seto:** Resource (equal). **Eiji Shimizu:** Writing-
629 Review and Editing (supporting). **Fumiyo Oshima:** Funding acquisition (lead); Methodology
630 (equal); Project administration (lead); Writing-Review and Editing (lead).

631

632 **Conflict of Interest**

633 The authors declare no conflict of interest.

634

635 **Funding**

636 This research was funded by External Fund Acquisition Promotion Program of Chiba
637 University for Fumiyo Oshima (Reference No: 430A11).

638

639 **Ethics Approval**

640 This study was performed in line with the principles of the Declaration of Helsinki. Approval
641 was granted by the Research Ethics Committee of Chiba University (Reference No:
642 M10319).

643

644 **Consent**

645 Full informed consent was obtained from all participants included in the study.

646

647 **Data Availability**

648 The data used in this study are available from the corresponding author upon reasonable
649 request.

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Tables

Table 1 Mean, standard deviation, range, kurtosis, and skewness of all variables

	Mean (SD)	Range	Skewness	Kurtosis
Age (years)	37.52 (9.81)	20–63	-0.49	0.63
Age at diagnosis (years)	31.80 (12.19)	1–60	-0.13	-0.48
WEMWBS	34.71 (10.10)	14–62	0.26	-0.23
PHQ-9	14.42 (6.54)	0–27	-0.05	-0.74
GAD-7	10.70 (7.57)	0–21	-0.02	-1.03
LSAS	80.48 (34.43)	0–144	-0.41	-0.44
AQ-J-10	8.47 (1.05)	7–10	0.10	-1.17
Collective strategy use	39.70 (15.31)	13–83	0.25	-0.37
Individualistic strategy use	50.17 (9.10)	19–74	-0.49	0.63
Stigma consciousness scale	8.48 (2.68)	0–15	-0.43	0.46
CAT-Q	110.86 (22.36)	47–173	-0.28	0.09

SD: standard deviation; WEMWBS: Warwick-Edinburgh Mental Well-being Scale; PHQ-9: Patient Health Questionnaire-9; GAD-7: Generalized Anxiety Disorder-7; LSAS: Liebowitz Social Anxiety Scale; AQ-J-10: Autism-Spectrum Quotient 10-item short version; CAT-Q: Camouflaging Autistic Traits Questionnaire.

Table 2 Hierarchical multiple regression model examining the predictive value of stigma, age, age at diagnosis, gender, and autistic characteristics in predicting camouflaging

Variable	B	95% CI	SE	β	P	f ²	Delta R ²
Step 1							0.092
Age	-0.49	[-0.98, -0.01]	0.24	-0.22	.046	0.013	
Age at diagnosis	0.40	[0.02, 0.79]	0.20	0.22	.039	0.014	
Male versus female	11.55	[6.38, 16.73]	2.63	0.26	< .001	0.066	
Male versus non-binary	15.02	[2.99, 27.06]	6.11	0.15	.015	0.019	
Autistic characteristics	1.34	[-1.08, 3.76]	1.23	0.06	.278	0.004	
Step 2							0.080
Age	-0.59	[-1.05, -0.12]	0.24	-0.26	.014	0.019	
Age at diagnosis	0.39	[0.02, 0.76]	0.19	0.21	.038	0.013	
Male versus female	11.27	[6.31, 16.22]	2.52	0.25	< .001	0.064	
Male versus non-binary	14.23	[2.71, 25.75]	5.85	0.14	.016	0.018	

Autistic characteristics	0.32	[-2.03, 2.67]	1.19	0.02	.787	0.001
Stigma	2.43	[1.51, 3.35]	0.47	0.29	< .001	0.087

B: unstandardized partial regression coefficient; CI: confidence interval; SE: standard error, β : standardized partial regression coefficient; f^2 : Cohen's f^2 ; Delta R: delta coefficient of determination; In Step 1, $F = 5.7$; $df (5,281)$; $p < .001$; $R^2 = 0.092$; In Step 2, $F = 9.7$; $df (6,280)$; $p < .001$; $R^2 = 0.172$.

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Table 3A Hierarchical multiple regression model examining the predictive value of individualistic and collective strategy use, age, age at diagnosis, gender, and autistic characteristics in predicting camouflaging

Variable	B	95% CI	SE	β	P	f^2	Delta R ²
Step 1							0.092
Age	-0.49	[-0.98, -0.01]	0.24	-0.22	.046	0.013	
Age at diagnosis	0.40	[0.02, 0.79]	0.20	0.22	.039	0.014	
Male versus female	11.55	[6.38, 16.73]	2.63	0.26	< .001	0.066	
Male versus non-binary	15.02	[2.99, 27.06]	6.11	0.15	.015	0.019	
Autistic characteristic	1.34	[-1.08, 3.76]	1.23	0.06	.278	0.004	
Step 2							0.102
Age	-0.40	[-0.86, 0.06]	0.23	-0.18	0.087	0.007	
Age at diagnosis	0.36	[-0.003, 0.73]	0.19	0.20	0.052	0.009	
Male versus female	10.10	[5.17, 15.02]	2.50	0.22	< .001	0.047	
Male versus non-binary	18.19	[6.73, 29.65]	5.82	0.18	.002	0.028	
Autistic characteristic	2.25	[-0.07, 4.58]	1.18	0.11	.058	0.009	
Individualistic strategy	0.83	[0.55, 1.10]	0.14	0.34	< .001	0.112	

Collective strategy	0.20	[0.04, 0.36]	0.08	0.14	.017	0.017
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B: unstandardized partial regression coefficient; CI: confidence interval; SE: standard error, β : standardized partial regression coefficient; f^2 : Cohen's f^2 ; Delta R: delta coefficient of determination; In Step 1, $F = 5.7$; $df (5,281)$; $p < .001$; $R^2 = 0.092$; In Step 2, $F = 9.6$; $df (7,279)$; $p < .001$; $R^2 = 0.194$.

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Table 3B Hierarchical multiple regression model examining the predictive value of individualistic strategy (without the subscale of “Concealing status”) and collective strategy use, age, age at diagnosis, gender, and autistic characteristics in predicting camouflaging

Variable	B	95% CI	SE	β	P	f^2	Delta R ²
Step 1							0.092
Age	-0.49	[-0.98, -0.01]	0.24	-0.22	.046	0.013	
Age at diagnosis	0.40	[0.02, 0.79]	0.20	0.22	.039	0.014	
Male versus female	11.55	[6.38, 16.73]	2.63	0.26	< .001	0.066	
Male versus non-binary	15.02	[2.99, 27.06]	6.11	0.15	.015	0.019	
Autistic characteristic	1.34	[-1.08, 3.76]	1.23	0.06	.278	0.004	
Step 2							0.007
Age	-0.48	[-0.96, 0.003]	0.25	-0.21	.051	0.014	
Age at diagnosis	0.40	[0.01, 0.78]	0.20	0.22	.042	0.016	
Male versus female	11.68	[6.50, 16.86]	2.63	0.26	< .001	0.071	
Male versus non-binary	15.84	[3.74, 27.94]	6.15	0.15	.010	0.024	
Autistic characteristic	1.69	[-0.78, 4.16]	1.26	0.08	.179	0.007	

Individualistic strategy (Excluding “Concealing status”)	0.26	[-0.13, 0.64]	0.20	0.08	.194	0.007
Collective strategy	0.09	[-0.09, 0.27]	0.09	0.06	.310	0.004

B: unstandardized partial regression coefficient; CI: confidence interval; SE: standard error, β : standardized partial regression coefficient; f^2 : Cohen’s f^2 ; Delta R: delta coefficient of determination; In Step 1, $F = 5.7$; $df (5,281)$; $p < .001$; $R^2 = 0.092$; In Step 2, $F = 4.4$; $df (7,279)$; $p < .001$; $R^2 = 0.099$.

Figure Legend

Figure 1. Mediation diagrams showing the relationships between stigma; camouflaging; and (A) mental well-being, (B) depression, (C) generalized anxiety, and (D) social anxiety *p = .015; **p = .004; ***p < .001

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Supplemental Information Legends

Supplemental Material 1. The translated version of the stigma consciousness scale, the individualistic use scale, and the collective strategy use scale

Supplemental Table 1. Correlation matrix of variables

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