Men and Women With First Episode Psychosis Present Distinct Profiles of Social Cognition and Metacognition

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Abstract

Deficits in social cognition and metacognition impact the course of psychosis. Gender differences in social cognition and metacognition could explain heterogeneity in psychosis. 174 (58 females) patients with first-episode psychosis completed a clinical, neuropsychological, social cognitive and metacognitive assessment. Subsequent latent profile analysis split by gender yielded 2 clusters common to both genders, a specific male profile characterized by presenting jumping to conclusions and a specific female profile characterized by cognitive biases. Males and females in the homogeneous profile seem to have a more benign course of illness. Males with jumping to conclusions had more clinical symptoms and more neuropsychological deficits. Females with cognitive biases were younger and had less self-esteem.

These results suggest that males and females may benefit from specific targeted treatment and highlights the need to consider gender when planning interventions.

1. Background

Gender differences in the onset and expression of psychosis are well documented and apparent since the first episode of psychosis (FEP) [1, 2]. Gender is one of the most predictive variables of clinical features at FEP [3], although this predictive power may be related to the large disparities that exist in other risk factors between the two genders [4]. Men with psychosis have poorer premorbid adjustment, higher levels of substance abuse and dependence, and more negative symptoms [2, 4]. Furthermore, men usually exhibit worse social functioning [5] and male sex is a predictor of relapse after FEP [6].

The reasons behind better prognosis in women are largely unknown. However, social cognition and metacognition seem an important variable to consider when explaining gender differences in psychosis. Patients with FEP experience significant deficits in social cognition [7] and metacognition [8]. Social cognition encompasses perception, interpretation, and information processing for adaptive social interactions [9], while metacognition refers to the spectrum of mental activities that involve the reflection upon one's and the other's thinking, and the synthesis of these phenomena into an integrated sense of the self and the others [10, 11]. Both social cognition and metacognition are important predictors of functional outcome when assessed globally [9, 12–14], but even specific subdomains of both constructs have distinct impacts in the disorder. The Jumping to Conclusions bias (JTC) has specific associations with neurocognition [15–18], inaccurate processing of social information [19], worse outcome [20], delusion forming and severity [16, 21, 22] and suicidal behavior [23]. Clinical insight has been related to treatment compliance, quality of life, depression, and symptoms among others [12, 24–26] but seems to be independent of neurocognition [27]. Attributional style has a clear influence in paranoia and persecutory delusions [28–30], and cognitive insight is related to depressive symptoms [31], and treatment compliance, symptoms and quality of life [12].

Research exploring gender differences in social cognition and metacognition is inconclusive, probably due to the tendency to present averaged results [32]. Although a majority of studies have failed to find significant differences between genders in social cognition [33, 34] or metacognition [35, 36]. However, exploring gender differences in social cognition and metacognition beyond mean differences often leads to important differences. For instance, Lysaker et al., 2019 sought to find levels of insight across symptom profiles, finding a group characterized by positive symptoms and impaired insight that contained a majority of females. Cobo et al., (2016) found that clinical insight correlated with different variables in each gender [36]. Similarly, García-Mieres et al. (2020) found that women with psychosis present more extreme dichotomous thinking but a richer personal identity system [38]. Likewise, Salas-Sender et al., (2019) found that men and women with FEP responded differently to metacognitive training [39].

Differences in social cognition and metacognition in psychosis may not be apparent when comparing performance, but may be rooted in discrepancies in information processing. Data driven methods permit capturing heterogeneity according to data, without testing preconceived hypothesis. Therefore, in this work, we sought to explore whether men and women with FEP present different profiles of social cognition and metacognition using latent profile analysis (LPA). As a second objective, we tested differences in demographic, clinical and neuropsychological variables among the derived profiles.

2. Methods

The design of the study and data collection stems from two research sources aimed to address the effectiveness of metacognitive training in people with FEP, under the register numbers NCT04429412 and NCT02340559.

Participants

Participants were 174 (58 females) individuals with FEP. Patients were referred by clinicians at one of the community mental-health services of the participant groups: Fundación Jiménez Díaz (Madrid), Servicio Andaluz de Jaén, Servicio Andaluz de Málaga, Centro de Salud Mental de Corporació Sanitària i Universitària Parc Taulí (Sabadell), Consultas externas del Hospital de Sant Pau (Barcelona), Centro de Higiene Mental Les Corts (Barcelona), Institut Pere Mata (Reus), Institut d´Assistència Sanitària Girona, Hospital Clínic de València and Parc Sanitari Sant Joan de Déu (PSSJD).

Inclusion criteria contemplated: 1) a diagnosis of schizophrenia, psychotic disorder not otherwise specified, delusional disorder, schizoaffective disorder, brief psychotic disorder, or schizophreniform disorder (according to DSM-IV-TR); 2) <5 years from the onset of symptoms; 3) a score ≥3 in item delusions, grandiosity, or suspiciousness of PANSS in the last year; 4) clinical stability in the previous 3 months, defined as no changes on psychopharmacological treatment or hospitalization in the previous 3 months, and 5) age between 18 and 45.

Exclusion criteria included 1) traumatic brain injury, dementia, or intellectual disability (premorbid IQ ≤ 70); 2) substance dependence 3) Scores higher than 6 in the PANSS items “Hostility” or “Suspiciousness”.

Measures

Sociodemographic questionnaire

Data on socio-demographic variables was collected on-site. Diagnosis and treatment were collected. We transformed the antipsychotic treatment to olanzapine defined daily dose (DDD) [40].

Clinical measures

The Positive and Negative Syndrome Scale (PANSS) [41, 42] was used to measure clinical and general symptoms. We used the 7-factor solution proposed by Emsley [43]. The Spanish version of the Scale Unawareness of Mental Disorders (SUMD) [44, 45] was used to measure unawareness of the mental disorder. Higher scores represent more unawareness of the mental disorder. We used the Rosenberg Self-Esteem Scale [46], where higher scores indicate better self-esteem.

Metacognition: The Beck Cognitive Insight Scale (BCIS) [47, 48] was used to measure cognitive insight. The BCIS is composed of two subscales: self-certainty and self-reflectivity, which are analyzed separately. Higher scores in self-reflectivity represent more ability to questioning one's beliefs. Higher scores in self-certainty represent more certainty in one's interpretations and misinterpretations. The Beads Task [49] was used to measure the JTC. Participants were shown a picture of two containers filled with 100 colored beads in reciprocal proportions. We used three trials with different conditions: a probabilistic trial with a 85/15 ratio, a second probabilistic trial with a 60/40 ratio, and a final trial with an affective condition in a 60/40 ratio. Participants were told that the computer had selected a container and that the goal of the task was to determine which container. To this aim, participants were shown one bead at a time. The participant was instructed to see as many beads as they needed to guess what container the beads came from. Our outcome variable was the draws to decision in the three probabilistic conditions. Less than 3 draws to decision is considered indicative of presenting the JTC bias.

Social Cognition: The Internal, Personal and Situational Attributions Questionnaire (IPSAQ) [50] was used to assess attributional style. We used two indexes: personalizing bias and externalizing bias. The Faces Test [51, 52] was used to measure emotion recognition. A reduced version of The Hinting Task [53, 54] was used to measure theory of mind.

Functional outcome

The Global Assessment of Functioning (GAF) [55] was used to measure clinical and social functioning on a scale of 0-100. Higher scores represent better functioning.

Neuropsychology

The Wisconsin Sorting Card Test (WSCT) [56, 57] was used to assess flexibility and inhibition. The Stroop Test (Stroop, 1935) was used to measure flexibility and inhibition. The Trail Making Test (TMT-A and TMT-B) [59, 60] were used as a measure of visuomotor attention, sustained attention, speed, and cognitive flexibility. The Continuous Performance Test (CPT-II for Windows) [59, 60] was used to assess sustained attention and impulsivity. MATRICS CPT [61, 62] was used as a measure of attention in a subsample of the participants. We created the composite variable “Attention” by adding the D-prime scores of both measures standardized into T scores. All the neuropsychological variables are presented in T scores. The Weschler Adults Intelligence Scale (WAIS) [63] subtests Vocabulary and Digits were used to measure premorbid intelligence and verbal fluency, and working memory respectively. The scores are presented in their conversion to IQ.

Statistical analysis

All descriptive analyses to explore the dataset were conducted using SPSS Version 22. We explored differences between genders in all measures prior to conducting the Latent Profile Analysis using U-Mann Whitney tests. Effect size is reported using Cohen’s d.

Latent Profile Analysis (LPA) broken down by sex was carried out using R Version 3.5.3 [64], and in particular the R package *mclust* [65]. This method identifies profiles of individuals, called latent profiles, based on responses to a series of continuous variables. The number of latent profiles was determined by analyzing 2–6 group models in which the variables included were: Faces Test (total score), the Hinting Task (total score), the IPSAQ (personalizing bias and externalizing bias scores), the BCIS (self-reflectivity and self-certainty scores), and the three conditions of the Beads Task (trials to decision).

Model selection to determine the optimal number of latent trajectories was performed according to the Bayesian Information Criterion (BIC) [66]. Additionally, we assessed variable importance by applying a classification tree via the R package *rpart* [67]. We used Kruskal-Wallis and Dwass-Steel-Critchlow-Fligner pairwise comparisons to calculate mean differences among the clusters. Effect size is reported using epsilon squared.

3. Results

3.1. Characteristics of the sample

A total of 174 patients with FEP were included in the analysis. Females were significantly older than males (p=0.013) and had received significantly more education (p=0.028). The samples differed in diagnosis (p=0.03), depression as measured by the PANSS (p=0.033), theory of mind (p=0.047), immediate recall (p=0.019), and long-term memory (p=0.034). We did not find any other significant differences between sexes.

3.2. Profile analysis

3.2.1. Males

We identified three diagonal, variable volume, variable shape, coordinate axes orientation (VVI) profile profiles (i.e., diagonal profiles with variable shape, volume, and orientation aligned to the coordinate axes) according to BIC (BIC=-2854.815). Additionally, the CART classification tree assessed that the affective condition of the beads task (40%) and the 60-40 condition of the beads task (36%) were the most important variables.

Profile 1, JTC, (28.7%) comprised males that presented the jumping to conclusions bias. Profile 2, Indecisive, (18.3%) presented an excessive number of trials in the three conditions of the Beads Task. Profile 3, Homogeneous, (53%) characterized a homogeneous profile in which all the variables examined grouped around the mean. Figure 1 shows the graphic representation of each profile in the male group.

Kruskal-Wallis tests yielded significant differences in positive (p=0.03) and disorganized (p=0.03) symptoms. Significant differences in positive symptoms did not survive subsequent pairwise comparisons. However, we found that males in the JTC profile had worse disorganized symptoms than males in the Homogeneous profile. Further, males in the JTC profile presented worse clinical insight than the other two profiles. We did not find other clinical differences.

As for neuropsychological variables, we found that males in the JTC profile scored worse than their counterparts in profiles Indecisive and Homogeneous in TMT-A and TMT-B, and worse than males in the Homogeneous profile in total errors of WSCT.

Males in the JTC profile scored better in our sustained attention measure than males in the Homogeneous profile. The mean scores of each variable included in the LPA and mean differences among profiles are presented in Table 1. Differences among the profiles in clinical and neuropsychological variables are displayed in table 2.

3.2.2. Females

We identified three diagonal, variable volume, equal shape, coordinate axes orientation (VEI) profile profiles for females (i.e., diagonal profiles with variable volume, equal shape, and orientation aligned to the coordinate axes) according to BIC (BIC=-1443.49). The CART classification tree indicated that the most important variables in defining the profile structure were the Personalizing Bias (32%) and Externalizing Bias (23%) subscales of the IPSAQ.

Profile 1, Homogeneous, was the dominant group, comprising 79.3% of the sample. Subjects in this sample were characterized by a homogeneous profile, with performance in all the variables clustered towards the mean.

Profile 2, Indecisive, included 8.6% of the sample, characterized by an excessive number of trials to decision in the Beads Task.

Profile 3, Cognitive Biases, was formed by 12.1% of the sample. It was defined by high self-reflectivity, very low externalizing bias, and very high personalizing bias.

Figure 2 shows the graphic representation of each profile in the female group.

Kruskal-Wallis tests yielded significant age differences (p=0.04) and self-esteem (p=0.04). Subsequent pairwise comparisons indicated that females in the Homogeneous profile were significantly older than females in the Cognitive Bias profile.

The mean scores of each variable included in the LPA and mean differences among profiles are presented in Table 1. Differences among the profiles in clinical and neuropsychological variables are summarized in table 2.

4. Discussion

In this study, we conducted a latent profile analysis to obtain profiles of social cognition and metacognition in FEP according to gender. We identified three profiles in each gender. We found 2 profiles (Homogeneous and Indecisive) that were present in males and females, while we found 2 profiles (JTC and Cognitive Biases) that were specific to each sex.

Males in the homogeneous profile seemed to have a more benign course of illness than their counterparts, specifically than males in the JTC profile. Conversely, females in the homogeneous profile were older, had fewer depressive symptoms and more self-esteem than females in the Cognitive Bias profile.

These findings may have relevant clinical consequences, as our results suggest that having homogeneous levels of social cognition and metacognition could be indicative of a more benign course of illness, although this explanation should be clarified in future research.

We found a second profile common to both genders (Indecisive), characterized by average scores in most variables except for draws to decision, which were a standard deviation higher than the mean. Females in this profile only presented significantly better self-esteem than the other profiles. Males in this profile had more positive symptoms than males in the homogeneous profile but scored significantly better in attention than males in the JTC profile. This profile grouped the least proportion of participants both in males (18.3%) and females (8.6%) and seems to have a clinical state similar to the homogeneous profile. However, the importance of its traits cannot be neglected. Although to our knowledge the role of an excessive number of DTDs in the beads task has not been studied, one interpretation could be excessive metacognitive monitoring. Participants could be constantly evaluating whether they have enough information to make a decision, which could inhibit decision making [24]. The particularities of this profile indicate that subjects with this profile could benefit from a different therapeutic approach.

Males in the JTC profile had worse neuropsychological performance, more positive and disorganized symptoms, and worse clinical insight. These results are consistent with previous studies reporting the association between JTC and more positive symptoms [16] and worse neuropsychological deficits [15–17]. Some studies have suggested that JTC could likely be a consequence of pre-existing neuropsychological deficits [16, 18]. On the contrary, the association

between clinical insight seems to be independent of neurocognitive abilities [27]. Notwithstanding, the three constructs have been associated with poorer outcomes [12, 14, 20], indicating that males in this profile could have a more troubled course of the disease and worse functioning.

Females in the Cognitive Bias profile had more personalizing bias and self-reflectivity, but less self-esteem than their counterparts. Further, we found a trend for significance in depression measured with BDI. Females in the Cognitive Bias profile scored higher in depression than the other two profiles. This presentation seems consistent with the insight paradox [25], a phenomenon in which more self-reflectivity is positively associated with depression and self-esteem [31].

Depression, self-esteem, and personalizing bias have been found not only to be closely associated with persecutory ideation and paranoia [28, 29, 50] but also with the severity of paranoia in subjects with FEP [30]. Females in this profile have more self-reflectivity, indicating that they have a better ability to reflect upon their processes. This ability may lead to a better awareness of their symptoms and difficulties, which could decrease self-esteem and increase depression. Ultimately, to preserve their self-esteem, females in this profile could blame other persons for negative events, which could, in turn, increase paranoid symptoms and perpetuate symptoms. This explanation, however, remains speculative as this study did not explore causality.

Our work must be interpreted considering several limitations.

First, our sample was not balanced in gender, which can have hampered our statistical power. Likewise, the sample size of each profile varied greatly. Therefore, although we used non-parametric tests to determine mean differences, some significant differences may not have been detected. Similarly, we did not conduct post-hoc analysis, as the comparisons presented in this work are qualitative comparisons based on the graphical representation of the clusters. We did not have a control group. Therefore, whether these profiles appear in the general population, the extent of the impairment and cut-off scores could not be calculated. We used a cross-sectional design that did not allow testing profile stability. These limitations notwithstanding, this is the first work yielding evidence of sex profiles in social cognition and metacognition. Future research confirming our profile solution, profile membership predictors, and illness course according to profile and gender are recommended, as well as understanding therapeutic components of interventions that are more adequate to specific genders and profile presentations.

There are relevant clinical implications to our work. A first implication is that males that present JTC and females that present higher self-reflectivity in conjunction with personalizing bias may have a worse presentation of the disorder. Interestingly, the clinical symptoms related to the JTC profile in males seem to be more associated with psychotic symptoms, while females in the cognitive bias profile seem to have more affective symptomatology. This is of particular importance since JTC and cognitive biases are modifiable [68] and identification and early correction of these cognitive patterns at prodromal stages or first-episode could have a positive impact in the course of the disorder.

Patients with different profiles of social cognition and metacognition may respond differently to therapeutic approaches. A study assessing gender differences in response to metacognitive treatment in a sample with FEP [39] reported that females improved more in cognitive insight, personalizing bias and general symptoms than males. Conversely, males improved more in the salient condition of the Beads Task, but not females. Our results are consistent with them in that our profiles follow the same direction as their findings, and further support them in that future studies should study which contents of metacognitive interventions could be more beneficial according to gender and profile of impairment.

While all the profiles could benefit from therapies that target metacognition, males could benefit from boosting sessions aimed at correcting the JTC, while females could benefit from boosting sessions directed to modify cognitive insight and attributional biases. Moreover, males that present JTC find optimal treatment in combining neurocognitive training with metacognitive therapy.

Finally, subjects with FEP do not receive an immediate chronic diagnosis, as the trajectories of the disease are heterogeneous. Predictors of profile membership and possible illness trajectories emerge in our work as promising topics for future research. Longitudinal studies assessing the prognosis of each profile and profile stability are encouraged.

Declarations

Conflicts of interest: The authors declare that they have no conflict of interest.

Ethical standards: All individuals were given an informative sheet, and all of them signed an informed consent file for participation in this study. The Ethics Committee of each participating center approved this project. The authors assert that all procedures contributing to this work comply with the ethical standards of the relevant national and institutional committees on human experimentation and with the Helsinki Declaration of 1975, as revised in 2008.

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Tables

Table 1
Mean scores of the social cognition and metacognition variables in each profile according to gender.

	Males						**Females**			
	Profile 1	Profile 2	Profile 3				Profile 1	Profile 2	Profile 3	
	JTC	Indecisive	Homogeneous	p	Pairwise comparisons	ε^2	Homogeneous	Indecisive	Cognitive Bias	p
	N=33	N= 21	N=61				N= 46	N= 5	N=7	
	Mean (SD)	Mean (SD)	Mean (SD)				Mean (SD)	Mean (SD)	Mean (SD)	
Beads Task										
85-15	2.33(1.16)	9.90(6.14)	3.98(1.70)	0.001	1<3, 1<2, 2>3	0.406	4.15(2.53)	19.40(0.89)	4.1(3.18)	0.001
60-40	3.12(2.17)	15.14(4.70)	8.18(2.48)	0.001	1<2, 1<3, 2>3	0.647	6.72(4.09)	18.00(2.00)	6.71(3.68)	0.002
Salient task	2.88(1.74)	13.52(4.13)	7.72(2.18)	0.001	1<2, 1<3, 2>3	0.685	6.96(3.88)	18.20(1.64)	6.71(3.68)	0.002
BCIS										
Self-certainty	9.12(3.090)	9.12(4.22)	7.78(2.74)	0.083			8.07(3.97)	8.40(3.64)	8.00(3.10)	0.964
Self-reflectivity	14.33(5.06)	16.0(5.35)	16.48(4.07)	0.101			14.26(5.42)	15.20(2.84)	20.29(1.89)	0.009
Faces Test	16.52(2.81)	17.19(1.91)	17.90(1.50)	0.059			17.28(1.73)	18.40(0.54)	16.57(1.39)	0.072
Hinting task	1.33(0.55)	1.61(0.28)	1.62(0.32)	0.053			1.70(0.33)	1.60(0.15)	1.52(0.24)	0.104
IPSAQ										
Personalising bias	1.25(0.70)	1.04(0.71)	1.30(0.53)	0.205			0.092(0.46)	1.30(0.20)	2.75(0.62)	0.0001
Externalising bias	0.45(3.88)	2.52(4.86)	0.23(3.21)	0.099			2.54(3.35)	1.00(3.33)	-4.86(1.95)	0.0001

Table 2. Mean scores and mean differences among the profiles in demographic, clinical and neuropsychological variables.

	Males						Females		
	Profile 1	Profile 2	Profile 3				Profile 1	Profile 2	Profile 3
	JTC	Indecisive	Homogeneous	p	Pairwise comparisons	ε^2	Homogeneous	Indecisive	Cognitive Bias
	N=33	N= 21	N=61				N= 46	N= 5	N=7
	Mean (SD)	Mean (SD)	Mean (SD)				Mean (SD)	Mean (SD)	Mean (SD)
Age (years)	26.45(6.70)	26.05(8.06)	27.7(6.87)	0.474			31.24(7.86)	29.00 (5.97)	23.43(7.85)
Education (years) (%)				0.001					
Incomplete primary school	18.2	14.3	5				6.5		
Complete primary school	24.2	28.6	11.7				10.9	20	28.6
Incomplete secondary school	27.3	9.5	28.3				13.0	20	28.6
Complete secondary school	18.2	23.8	33.3				23.9	20	28.6
Incomplete superior studies	6.1	14.3	8.3				17.4	40	14.3
Complete superior studies	6.1	9.5	13.3				28.3		
Antipsychotic dose (DDD)	14.17(13.86)	9.03(4.19)	18.73(58.54)	0.372			22.38(62.61)	9.58(6.98)	12.51(8.75)
Diagnosis (%)				0.001					
Schizophrenia	48.48%	33.33%	52.46%				26.09%	60	28.57%
Psychotic disorder NOS	12.12%	28.57%	36.07%				30.43%	20	14.29%
Schizoaffective disorder	15.15%	4.76%	1.64%				10.87%	20	42.86%
Delusional disorder	3.03%	14.29%	4.92%				13.04%		14.29%
Brief psychotic disorder	12.12%	19.05%	3.28%				13.04%		
Schizophreniform disorder	6.03%		1.64%				6.52%		
Emsley factors									
Positive symptoms	17.97(7.21)	17.71(5.60)	14.97(6.31)	0.021	1>3, 2>3	0.069	16.18(6.42)	13.60(3.91)	13.29(4.72)
Negative symptoms	16.18(7.90)	16.76(6.46)	15.46(7.06)	0.680			14.36(6.77)	15.80(6.76)	15.29(5.22)
Disorganised symptoms	9.82(4.28)	8.85(3.62)	7.80(3.32)	0.039	1>3	0.058	8.05(3.85)	7.20(3.27)	7.71(2.36)
Excited symptoms	6.15(3.12)	5.52(2.50)	5.41(2.49)	0.408			5.43(3.14)	4.20(0.45)	4.43(0.79)
Motor symptoms	2.91(1.87)	2.67(1.28)	2.98(1.44)	0.268			2.61(1.11)	3.40(2.19)	3.43(1.27)
Depression	4.52(2.58)	4.76(1.95)	4.08(1.92)	0.333			5.09(2.51)	6.40(3.36)	5.29(2.21)
Anxiety	5.94(2.38)	6.05(2.27)	5.74(2.28)	0.772			5.83(2.42)	5.00(1.22)	6.00(3.42)
GAF	60 (12.71)	57.10(11.34)	60.11(12.97)	0.538			60.00(12.22)	54.2(9.12)	60.43(14.88)
Rosenberg (total)	28.1(6.83)	27.0(5.20)	27.1(6.12)	0.668			27.3(5.42)	31.6(8.02)	22.7(6.52)
BDI (total)	14.79(9.35)	15.86(7.61)	14.20(9.43)	0.501			14.46(9.12)	15.60(12.12)	22.86(7.49)
SUMD (global)	8.18(3.86)	5.81(3.63)	5.59(3.02)	0.040	1>3	0.096	5.80(3.97)	6.20(5.07)	4.57(2.15)
WSCT (T)									
Total errors	39.71(9.34)	46.90(16.85)	47.46(12.62)	0.024	1<3	0.072	44.98(14.35)	43.60(5.81)	41.29(11.15)

Perseverative errors	42.15(8.10)	47.33(17.21)	48.98(12.58)	0.063			44.95(15.13)	44.00(8.43)	44.43(7.44)
Non-perseverative errors	40.25(7.93)	45.33(17.55)	46.61 (12.68)	0.063			45.45(14.14)	43.40(5.37)	39.71(13.00)
Stroop test (T) - interference	85.58(19.11)	55.62(11.76)	55.22(12.21)	0.772			53.69(10.71)	50.75(5.06)	51.29(14.77)
WAIS-III (T)									
Digits	40.96(7.96)	41.42(9.67)	45.49(9.93)	0.044	1<3	0.05	44.22(9.26)	48.66(6.41)	42.14(10.11)
Vocabulary	85.58(19.11)	92.29(24.92)	95.57(18.32)	0,045	1<3	0.057	94.21(21.07)	97.00(7.58)	89.90(27.45)
Attention (T)	51.40(12.11)	42.73(14.20)	46.00(6.12)	0.022	1>2	0.079	49.84(13.19)	36.65(15.60)	51.92(11.76)
TMT (seconds)									
TMT-A	73.19(23.38)	64.24(17.26)	62.31(15.41)	0.049	1>3	0.055	65.94(24.34)	66.25(13.59)	64.58(11.72)
TMT-B	107.38(81.88)	71.51(18.91)	70.06(23.28)	0.001	1>3	0.123	68.42(20.13)	59.82(14.00)	73.47(17.11)
Tavec									
Immediate recall	39.6(9.20)	38.7(9.22)	39.5(9.92)	0.970			45.2(12.4)	43.9(15.1)	36.2(7.20)
Short-term memory	32.6(12.3)	38.0(16.8)	35.3(17.7)	0.291			40.5(13.3)	39.1(9.58)	35.0(13.2)
Long-term memory	30.7(14.2)	35.33(17.68)	33.94(16.26)	0.413			39.6(14.2)	40.3(10.5)	33.6(18.0)

Figures

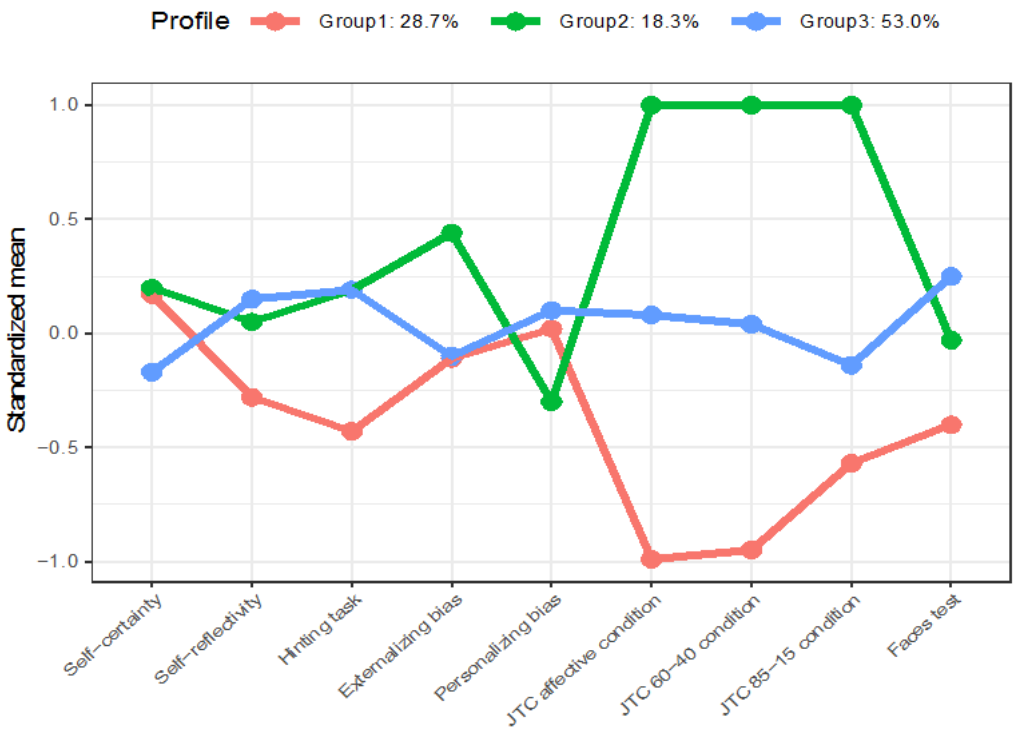

Figure 1

Profiles of each group in the male sample with standardized means in each of the variables included in the LPA.

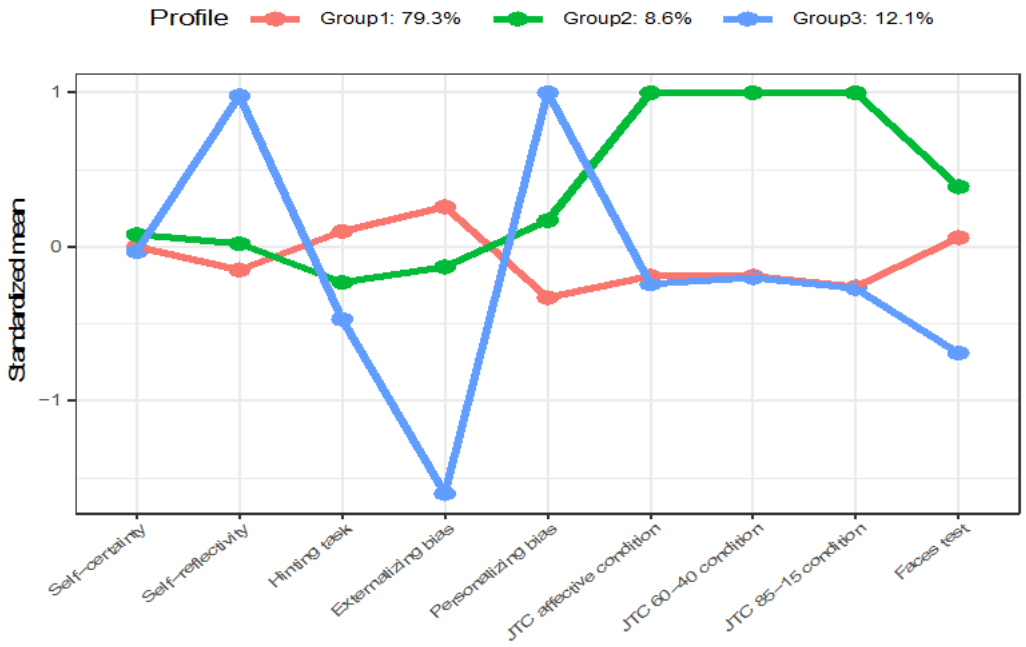

Figure 2

Profiles of each group in the female sample with standardized means in each of the variables included in the LPA.