

# The role of aberrant salience and alexithymia in psychotic experiences of non-treatment-seeking adolescent immigrants compared with natives

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**Introduction and objectives:** Immigration in Europe is a challenge for health care systems. Psychotic experiences are not uncommon in the community. Meta-analyses showed that immigrants are at higher risk of psychotic symptoms and experiences than natives. In the international literature, there is little knowledge about the psychological processes explaining the relationship between immigrant status and psychotic experiences. Aberrant salience, the biased assignment of significance to otherwise innocuous stimuli, and alexithymia (difficulty identifying/verbalizing feelings and concrete speech/thinking) have been found to be vulnerability/maintenance factors of psychotic symptoms. This report presents a study investigating whether: 1) adolescent immigrants in Italy report more intense psychotic experiences than natives; 2) aberrant salience and alexithymia predict more intense psychotic experiences; and 3) these psychological processes moderate the effect of immigrant status on psychotic experiences. Knowledge about the role of these processes in psychotic experiences may suggest early detection or prevention strategies.

**Methods:** One hundred and forty-eight community adolescents were recruited (mean age =17.57 years, 47.30% females); of these, 75 were born in Italy (natives) and 73 were immigrants (born in countries other than Italy). The Aberrant Salience Inventory, the Toronto Alexithymia Scale-20, and the Screening for Psychotic Experiences were administered in classrooms.

**Results:** Immigrants had higher aberrant salience ( $F=4.38, p<0.05$ ), alexithymia ( $F=8.93, p<0.01$ ), and psychotic experiences ( $F=10.65, p<0.01$ ) than natives. Higher aberrant salience and alexithymia predicted more intense psychotic experiences. An interaction effect between immigrant status and alexithymia emerged: immigrants with higher alexithymia had more intense psychotic experiences ( $\beta=0.17, p<0.001$ ).

**Conclusion:** Early detection or prevention programs should focus on aberrant salience in the adolescent population and should consider young immigrants with higher alexithymia as a subgroup with higher psychotic experiences. Mindfulness-based programs may be implemented for this adolescent subgroup to promote emotional intelligence.

**Keywords:** aberrant salience, emotional awareness, psychotic experience, adolescents, immigrants, emotional intelligence

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## Introduction

Immigration has progressively drawn the attention of policymakers in Europe during the last decade. Different from most European countries, migration into Italy is a relatively new phenomenon. A recent survey showed that in 2017 the immigration flow amounted to over 301 thousand foreign citizens, showing a sharp increase over the

previous year (+14.5%).<sup>1</sup> According to recent meta-analyses history of migration is associated with a higher risk of psychotic disorders.<sup>2,3</sup> Psychotic experiences are not uncommon in the general population: they are present not only in patients with full psychosis but they may be experienced also by patients with non-psychotic disorders and to some extent by a subgroup of the general population.<sup>4</sup> Having one of psychotic symptoms/experiences was reported in 17–25% of the non-treatment seeking people in the Western population.<sup>4,5</sup> Psychotic experiences include different subjective feelings such as diminished sense of self (lack of identity, feeling different from others), decreased ability to be affected by stimuli, depersonalization/derealization, intense reflectivity (eg, tendency to take oneself/parts of oneself or elements of the external environment as objects of intense reflection), and perplexity (difficulty automatically grasping the meaning of everyday events).<sup>6</sup>

Aberrant salience and alexithymia are two psychological processes hypothesized to have a role in the vulnerability to psychotic features. During the process of attribution of salience or significance, the characteristics of external stimuli are compared to their context and, depending on their level of saliency, demand focus of attention and drive goal-directed behaviors due to their association with reward or punishment.<sup>7</sup> The Aberrant Salience hypothesis of psychosis<sup>7</sup> states that under normal circumstances, the context-driven activity of the dopamine system mediates the experience of novelty and, thus, the acquisition of appropriate motivational salience. During psychotic experiences, a context-inappropriate firing of dopamine neurons/release has been observed.<sup>7</sup> Thus, aberrant salience includes feelings of increased significance, sharpening of senses, impending understanding, heightened emotionality, and heightened cognition.

Alexithymia is a transdiagnostic psychological process that refers to difficulties related to emotional awareness including difficulty recognizing/verbalizing feelings, paucity of fantasy life, and concrete speech and thought.<sup>8</sup> Recently it has been found to be associated with psychotic symptoms/experiences in adolescence.<sup>9,10</sup>

In the international literature, there is little knowledge about the psychological processes moderating the relationship between immigrant status and psychotic experiences. No study investigated the role of aberrant salience and alexithymia in psychotic experiences among immigrants. Knowledge of psychological processes related to psychotic experiences in non-treatment-seeking adolescents might inform early detection/prevention strategies. This short

report presents a study aimed to investigate whether (1) adolescent immigrants have more intense psychotic experiences than natives, (2) aberrant salience and alexithymia are associated with more intense psychotic experiences, (3) these psychological processes moderate the effect of immigrant status on psychotic experiences.

## Materials and methods

### Participants and procedure

Inclusion criteria were age of 14–25 years old, provision of written informed consent and a good competence in reading Italian. Individuals with certified learning disabilities and mental retardation problems were excluded. A convenience sampling procedure was used. Data were collected at high-schools and university centers in three cities of Italy during the first six months of 2017. Participants completed the paper and pencil questionnaires in classrooms during regular class hours or university lessons. Administration of the questionnaires was assisted by a team of psychologists and lasted approximately 30 mins. All the participants provided written informed consent to participate after having received a detailed description of the study aims. For participants aged under 18 years old, written informed consent was provided from both parents. The Ethics Committee of the University of Florence and the schools boards approved the study in accordance with the Declaration of Helsinki.

### Measures

The Aberrant Salience Inventory (ASI),<sup>11</sup> a 29-item questionnaire with a dichotomous scale (Yes =1, No =0), was used to assess aberrant salience. Higher scores indicate stronger aberrant salience. It showed good reliability and convergent validity with measures of psychosis-proneness.<sup>11</sup> In the present study, internal consistency was excellent. The Toronto Alexithymia Scale-20 (TAS-20),<sup>8</sup> a 20-item questionnaire, was used to measure alexithymia. The total score of the scale was used for this study. Higher scores indicate higher alexithymia tendencies. In the current study, internal consistency was good. The Screening for Psychotic Experiences (SPE),<sup>12</sup> a 20-item questionnaire, was used to assess psychotic experiences/feelings typical of psychotic symptoms, that need for further assessments, such as self-reference ideas, delusional perceptions, self-neglecting, depersonalization/derealization. It was developed based on the items of one of the gold standard measures of psychosis-proneness, the

Prodromal Questionnaire.<sup>13</sup> A total score is calculated with higher scores reflecting more intense psychotic experiences. All these experiences have been found to strongly predict psychotic symptoms.<sup>13</sup> The SPE showed good internal consistency.<sup>14</sup> In the current study, internal consistency was good.

## Statistical analysis

A score on the SPE two standard deviation higher than the normative mean<sup>12</sup> was used as a cut-off to identify adolescents reporting significant psychotic experiences. Scores on the SPE, TAS-20, and ASI were categorized as continuous variables. No missing data were found on all the items of the scales. Differences between immigrants and natives were assessed through a preliminary analysis where chi-squared statistic or one-way ANOVAs were calculated. To test the effect of immigrant status combined with aberrant salience and alexithymia, one ANCOVA was carried out entering immigrant status as a factor and the TAS-20 and the ASI scores as covariates and including the SPE scores as outcome. Effect sizes were computed as partial squared Eta ( $\eta^2$ ): values of 0.01, 0.06, and 0.14 were interpreted as small, medium, and large, respectively.<sup>15</sup> Statistical significance was set at  $p < 0.05$ . Data analysis was carried out using SPSS 21.00.

## Results

One hundred forty-eight community adolescents were recruited: 75 were native Italians and 73 immigrants. In the total sample, mean age was 17.57 years old ( $SD = 2.08$ , range = 14–25). Seventy participants were females (47.30%). Immigrants' mean duration of stay in Italy was 10.98 years ( $SD = 4.67$ ). Thirty-five immigrants (48%) came from other European countries, 10 (14%) from Africa, 24 (33%) from Southern America, 4 (6%) from Asia.

Twenty percent of the total group had significant psychotic experiences, as suggested by a SPE score 2SD higher than the normative mean.<sup>12</sup> A higher number of immigrants (29.4%) had more intense psychotic experiences than natives (10%) as suggested by a SPE score 2SD higher than the normative mean [ $\chi^2_{(1)} = 8.25$ ,  $p < 0.01$ ].

The results of the one-way ANOVA showed that compared with natives, adolescent immigrants had higher aberrant salience ( $F = 4.38$ ,  $p < 0.05$ ), alexithymia ( $F = 8.93$ ,  $p < 0.01$ ), and psychotic experiences ( $F = 10.65$ ,  $p < 0.01$ ). The results of the ANOVA are displayed in Table 1.

The ANCOVA showed main effects with medium effect sizes of ASI and TAS-20 scores on SPE scores suggesting that adolescents with higher aberrant salience and alexithymia had higher psychotic experiences. In the ANCOVA model, the effect of immigrant status disappeared as the main effect of immigrant status was not significant. An interaction effect between immigrant status and TAS-20 scores emerged with a large effect size: adolescent immigrants with higher alexithymia had higher SPE scores (Table 1).

## Discussion

In the international literature, the psychological processes explaining the relationship between immigrant status and psychotic experiences are understudied. This short report presents a study aimed to investigate the role of aberrant salience and alexithymia in psychotic experiences of adolescent immigrants and natives. The total proportion of adolescents reporting significant psychotic experiences was in line with the data yielded by population-based studies.<sup>4</sup> In line with previous meta-analyses,<sup>2,3</sup> immigrants had higher psychotic experiences suggesting that they should be considered as a more vulnerable subgroup needing for close monitoring. Consistent with the Aberrant Salience Hypothesis of psychotic features,<sup>7</sup> we found direct effects of aberrant salience and alexithymia on psychotic experiences in the total group. This suggests that a biased attribution of salience or significance to stimuli based on attentional/perceptive processes and difficulties identifying/verbalizing emotions may have an important role as etiological mechanisms involved in the development of psychotic experiences. Lack of emotional awareness may be an etiological mechanism particularly important for adolescent immigrants.

These results may suggest that early detection/prevention programs in adolescents should include components that reduce attentional biases and promote emotional intelligence such as mindfulness-based programs, already proven effective for the adolescent population.<sup>16</sup> In addition, early detection/prevention programs should consider the adolescent immigrants with higher alexithymia tendencies as a target subgroup which may benefit from those psychological health promotion programs. However, it should be noted that the present analyses did not allow conclusions on these results in terms of early detection or prognosis (for predicting the development of a psychotic disorder) to be drawn. Future research should use additional analytical strategies such as ROC curves analyses.

**Table 1** One-way ANOVA and ANCOVA: effects of immigrant status, ASI, and TAS-20 scores on SPE scores

one-way ANOVA									
	Natives (n=75)		Immigrants (n=73)		$F_{(1, 146)}$	p-Value	95% CI		
	M	SD	M	SD			Lower limit	Upper limit	
TAS-20	54.40	12.44	63.00	11.31	8.93	0.005	58.18	62.14	
SPE	7.75	3.50	9.40	3.65	10.65	0.002	7.97	9.16	
ASI	14.25	5.10	16.11	5.19	4.38	0.03	14.32	16.02	
ANCOVA									
Outcome: SPE	$F_{(1, 145)}$	p-Value	$\beta$	t	p-Value	95% CI		Partial $\eta^2$	Observed power
						Lower limit	Upper limit		
ASI main effect	18.62	<0.001	0.20	2.58	0.01	0.04	0.36	0.05	0.72
Immigrant status main effect	2.85	0.09	4.70	1.68	0.09	-0.81	10.22	0.02	0.38
Immigrant status * ASI interaction effect	0.72	0.39	0.10	0.85	0.39	-0.13	0.33	0.01	0.13
Native status * ASI interaction effect			0 <sup>a</sup>	0 <sup>a</sup>	0 <sup>a</sup>	0 <sup>a</sup>	0 <sup>a</sup>	0 <sup>a</sup>	0 <sup>a</sup>
Native status * TAS-20 interaction effect	4.97	0.02	0.05	1.44	0.15	-0.02	0.12	0.01	0.29
Immigrant status* TAS-20 interaction effect			0.17	4.60	<0.001	0.09	0.24	0.16	0.99
TAS-20 main effect	18.36	<0.001	0 <sup>a</sup>	0 <sup>a</sup>	0 <sup>a</sup>	0 <sup>a</sup>	0 <sup>a</sup>	0 <sup>a</sup>	0 <sup>a</sup>

Note: <sup>a</sup>Parameter set at 0 because redundant in the model.

Abbreviations: ASI, aberrant salience inventory; CI, confidence interval; SPE, screening for psychotic experiences; TAS-20, Toronto Alexithymia Scale-20.

Some limitations and directions should be pointed out. The cross-sectional design allows us to draw only conclusions about an association between the variables. In addition, a larger sample size may allow other concurrent variables to be controlled for such as general distress. The use of a self-report measure of psychotic experiences should be accompanied by further assessment through an interview administered by a clinician to those adolescents having significant psychotic experiences (a SPE score 2SD higher than the normative data). It may also be interesting to examine potential differences in the psychotic experiences across immigrant subgroups.

In conclusion, the present short report adds some data regarding the role of psychological processes related to psychotic experiences in non-treatment-seeking young people. Compared with natives, immigrants seem to be a subgroup with higher psychotic experiences and related psychological factors including aberrant salience and alexithymia. The immigrants with higher alexithymia seem to have more intense psychotic experiences. An implication of these results may be that difficulty identifying or verbalizing feelings should be regarded as an etiological psychological process involved in the pathway to psychotic experiences among immigrant adolescents.

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## Disclosure

The author declares no conflicts of interest in this work.

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