

Identity development, intelligence structure, and interests: a cross-sectional study in a group of Italian adolescents during the decision-making process

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Background: Forming one's identity is thought to be the key developmental task of adolescence, but profound changes in personality traits also occur in this period. The negotiation of complex social settings, the creation of an integrated identity, and career choice are major tasks of adolescence. The adolescent, having to make choices for his or her future, has not only to consider his or her own aspirations and interests but also to possess a capacity for exploration and commitment; in fact, career commitments can be considered as a fit between the study or career that is chosen and personal values, skills, and preferences.

Methods: The objective of the study reported here was to investigate the role of identity on profile of interests; the relation between identity and decisional style; the correlation between identity, aptitudes, interests, and school performance; and the predictive variables to school success. The research involved 417 Italian students who live in Enna, a small city located in Sicily, Italy, aged 16–19 years (197 males and 220 females) in the fourth year (mean =17.2, standard deviation =0.52) and the fifth year (mean =18.2, standard deviation =0.64) of senior secondary school. The research lasted for one school year; the general group of participants consisted of 470 students, and although all participants agreed to be part of the research, there was a dropout rate of 11.28%. They completed the Ego Identity Process Questionnaire to measure their identity development, the Intelligence Structure Test to investigate aptitudes, the Self-Directed Search to value interests, and General Decision Making Style questionnaire to describe their individual decisional style.

Results: The data showed that high-school performance was positively associated with rational decision-making style and identity diffusion predicted the use of avoidant style. Interests were related to identity exploration; the differentiation of preferences was related to identity commitment; investigative personality correlated with the rational style and negatively with the spontaneous style and high levels of school performance; and social personality correlated with the use of the spontaneous style and the intuitive style, a high-profile identity, and identity exploration.

Conclusion: Intervention in the development of the identity process proves to be fundamental for increasing aptitudes and improving school performance, and, above all, for broadening the diversification and coherence of interests and improving the decisional process.

Keywords: adolescence, identity status, intelligence structure, interest, personality

Introduction

A person's identity arises in the womb. Its development is shaped by macro-level factors such as gender roles, culture, and history. Identity is also likely to be formed by individual-difference features such as temperament, as well as by core personality dimensions (eg, extraversion, agreeableness, conscientiousness, neuroticism, openness).

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Moreover, identity develops within relationships with significant others (ie, the family),^{1,2} which are also responsible for the healthy development of the individual's personality.^{3,4}

Only during adolescence does identity, as well as the decision-making process and coping strategies, become independent. The construction of identity in adolescence and the mechanisms through which it reaches vocational maturity, lead the person to explore himself or herself and his or her competences and interests, and to make adequate choices.

The vocational decisional process during adolescence is a complex and dynamic one and constitutes a competence that is concretized in a personal style of choice;⁵ adolescents with a secure decisional process have the ability to plan their careers and a highly developed vocational identity, which is enacted through greater exploration of the self and the environment.^{6,7}

Reflection on vocational identity appears to be an essential task for defining projects for life and planning a profession. Choice is a complex cognitive task, which also has to take into account all possible options, including those regarding the future, and ones that are not predictable, on the basis of the development of identity, interests, skills, and values.^{8,9}

Marcia defines identity in adolescence as a dynamic rather than static structure, whose formation depends on different factors like the decisions made during life.¹⁰ The author introduces the concept of identity statuses, which represent the styles through which to face identity problems, delineating two of their key components: the commitment with which adolescents make choices on material issues, and the exploration of alternatives in relation to objectives, beliefs, and convictions.¹¹⁻¹⁴ The author, jointly analyzing the two dimensions, identifies four identity statuses: achievement, moratorium, foreclosure, and diffusion.

Over the years, Marcia's model has been integrated,^{11,15} organizing the four identity statuses along a healthy (achievement and moratorium) versus unhealthy continuum (foreclosure and diffusion), distinguishing the following: a) achievement status, characterized by a positive self-image, flexibility, high level of learning motivation, and cognitive independence;¹⁶ b) moratorium status, typical of adolescents who present greater uncertainty, fears for the future, limited flexibility, and reduced cooperation; c) foreclosure status, a stage characterized by conventionality, rigidity, low self-esteem, lack of autonomy, and relationships with conflict; and d) diffusion status, typical of those who show greater flexibility and cognitive

complexity but poor self-respect, and have relationships that are not very satisfactory.

Identity, interests, and aptitudes in the vocational decisional process

Alongside the traditional approaches, which privilege the evolution of interests as decisive in the vocational decisional process, some authors have undertaken in-depth examinations of the relationship between interests and the exploration of identity.^{17,18}

Interests are motivating forces on the basis of which the subject feels he or she is able to face a task which, if successfully carried out, strengthens and stabilizes preferences.¹⁹ Interests do not present a static structure but dynamic directions,²⁰ which play a decisive role in the transition to the world of work.^{21,22} The degree of continuity and change in a person's interests over the course of life produces effects both on identity development and in the encounter between academic and professional adaptation.²³

The literature shows that subjects with an achievement identity manifest a high level of decisional self-effectiveness and differentiation of interests,¹⁸ and those with a foreclosure identity have a low level of self-effectiveness in choices and diversification of professional preferences;^{8,24} these findings are consistent with research on identity status that indicates that persons with an achieved identity status manifest career decidedness, career self-efficacy, and rational and systematic decision-making styles.²⁵ However, the absence of stable elements in personal identity makes the exploratory process difficult and forces the subject sometimes to make unsatisfactory choices; not having constructed a diversified identity prevents one from being clear about one's own goals, and being able to discern between motivations and individual interests and between pressures and contextual demands on one's scholastic and professional future.

Starting with the Holland's theory²⁶ which investigates personality as arising from personal interests, has initiated a series of studies aimed to identify predictive factors to school success. For example, the literature shows the relationship between extraversion and social interests, and between openness to experience and artistic interests; both these personality characteristics are associated with low levels of performance.²⁷

These data have stimulated further research on the relationship between identity development, interests, and aptitudes as predictors of school success; for example, the literature has demonstrated the relationship between intelligence structure or aptitude, creativity,²⁸ learning, and

academic success in education, but the possible influence of aptitudes on vocational decision making has been little investigated.²⁹ The only data in the literature concern the personality traits of foreclosed students, who often manifest a limited academic performance because they are disposed to a self-limiting style of decision making, problem solving, and information processing.³⁰

Objective and aims

The objective of the research presented here was to investigate the career decision making in adolescence; in particular, the role of identity development on profile of interests; the relation between identity and decisional style; the correlation between identity, aptitudes, and interests and school performance; and the predictive variables to school success.

The first aim was to investigate how adolescents, classified into the four identity statuses, differ in the structure of their interests (according to Holland's hexagonal model), or in levels of differentiation, congruence, stability, and in the typology of preferences expressed. In agreement with the literature,^{17,24,31,32} we expected that adolescents with a high-profile identity status would present a greater level of differentiation, coherence, and stability of interests compared with students with a low profile.

A further objective was to investigate whether there is a relationship between identity status and decisional style. In agreement with the literature,^{14,16,33} it was hypothesized that adolescents with a low-profile status sometimes tend to use a dependent decisional style (characterized by the continual search for others' advice and opinions before facing a choice), and sometimes an avoiding style, typical of those people who make continual attempts to avoid making decisions as much as possible.

Investigating the studies in the literature that identify a correlation between some typologies of interests, personality characteristics, personal development, and aptitudes and school performance,^{34,35} a further objective was to verify the relationship between these variables in the group of participants, hypothesizing that: a) adolescents with an artistic personality are characterized by the use of a spontaneous decisional style, high levels of diversification of interests, and identity exploration; b) subjects with a realistic personality present high levels of school performance and identity development; and c) adolescents with an enterprising personality tend to have recourse to a rational style and present higher levels of school performance.

The last aim was to investigate the variables predictive of success in school, hypothesizing, as confirmation of the

literature, that among the predictors of the level of school performance, we would find the following: i) intelligence structure;^{35,36} ii) level of identity;³⁷ iii) the socioeconomic status (SES) of the belonging context;³⁸ iv) use of a rational decisional modality; and v) interest of a realistic, investigative, and enterprising type.³⁹

Materials and methods

Participants

The research involved 417 Italian students (197 males and 220 females) in the fourth year (mean [M] = 17.2, standard deviation [SD] = 0.52) and the fifth year (M = 18.2 years, SD = 0.64) of senior secondary school, who live in Enna, a small city located in Sicily, Italy. The research lasted for 1 year. The group of participants identified involved all high-school students attending in the last 2 years, as authorized by the headteachers and teachers of the schools. The administration of instruments took place during school time. The general group of participants consisted of 470 students; although all subjects agreed to be part of the search, there was a dropout rate of 11.28%; this occurred because the instruments were administered on three different days and the possible absences of the students made it difficult to complete the compilation of all research protocols.

With reference to the varying age, the participants were subsequently stratified into two groups: a) a group of 223 subjects: 101 males (45.3%) and 122 females (54.7%) aged between 16 and 17 years old and b) a group of 194 students: 96 males (49.5%) and 98 females (50.5%) aged between 18 and 19 years old.

The consent of the school authorities and the students involved in the study was sought before the distribution and collection of the instruments. The questionnaires were anonymous and the participants were informed of the aim of the research; parental consent was obtained for the students under the age of 18 years.

Instruments

Participants completed an anamnestic questionnaire, the Intelligence Structure Test, the Ego Identity Process Questionnaire (EIPQ), the Self-Directed Search (SDS), and the General Decision Making Style (GDMS) questionnaire.

Anamnestic data were collected through the administration of a questionnaire constructed ad hoc and divided into two parts: the first to acquire basic information, age, sex, school, year attended, academic qualifications, and professions of parents; the second for establishing school

performances, such as absences, permissions (arriving late or leaving early), favorite subjects, and marks obtained in the last 30 days.

The Intelligence Structure Test is an evolution of Amthauer's Intelligence Structure Test, adapted for Italy by Poláček.⁴⁰ The tool serves to investigate three vocational areas: verbal, numerical, and figurative. It is constituted by three batteries: basic, shortened, and complementary.⁴¹ Participants completed the basic battery, which consists of nine aptitude tests and a memory test. The Italian adaptation of the test presents an alpha coefficient that is good for the oral area (0.70) and the numerical one (0.70) but weak for the figurative one (0.41).

The EIPQ is a tool that investigates identity status development according to Marcia's model through the dimensions of exploration and commitment. The exploration level is measured through the analysis of four ideological domains (occupation, religion, politics, and values), and the commitment level is investigated through four interpersonal domains (family, friendships, gender roles, and sentimental relationships). Balistreri et al reported the estimates of internal validity of the tool: 0.80 for the results that indicate commitment and 0.86 for the scores that indicate exploration; the scores that indicate reliability are 0.90 for commitment and 0.76 for exploration; the internal consistency is 0.72 and 0.71 for commitment and exploration, respectively.⁴²

The SDS⁴³ classifies professions into six types, together referred to as "RIASEC": realistic, intellectual, artistic, social, enterprising, and conventional. These types of interests make it possible to measure expressed scholastic-professional preferences, and to evaluate three indexes: a) congruence – coherence between the interests expressed and investigated; b) differentiation – span of the range of preferences manifested; and c) consistency, which depends on the similarity between the types of profession represented by Holland's single code. The Italian adaptation presents high levels of consistency, all above 0.70: the maximum alpha value has been obtained for the realistic area (0.86) and the lowest for the social area (0.70).

The GDMS tool,⁴⁴ constructed for detecting individual decisional style, is a questionnaire consisting of 25 items grouped into five subscales corresponding to five decisional styles: rational (deep search for information and systematic evaluation of alternatives), intuitive (confidence in one's own intuitions and feelings), dependent (search for advice and opinions from people that are considered competent), avoidant (attempt to avoid decision making), and spontaneous

(making the choice in the shortest possible time). The Italian version shows that the Cronbach's alpha reliability coefficients vary from a minimum of alpha 0.68 for the rational scale to a maximum of 0.83 for the avoidant scale and 0.75 for spontaneous scale.⁴⁵

Data analysis

All analyses were conducted with SPSS software (v 19.0).

In reference to preliminary data the following analyses were performed: frequency distribution to investigate the identity development; multivariate analysis of variance (MANOVA) to verify the influence of sex and age on identity, interests, aptitude, and decisional style; the same analysis to investigate the influence of sex and age on the ideological and interpersonal domains of identity; and Pearson's correlations were determined to measure the relation between interests and independent variables and between decisional style and independent variables.

To verify the hypothesis that adolescents with an achievement identity manifest a greater level of differentiation, coherence, and stability of interests compared with students with a low-profile identity, multivariate analysis of variance was carried out.

To verify the hypothesis that adolescents with a low-profile status sometimes tend to use a dependent decisional style and sometimes an avoidant style, univariate analysis of variance was used, because decision-making style represents a single dependent variable divided into five levels (rational, dependent, avoidant, intuitive, and spontaneous), according to the model of Scott and Bruce.⁴⁴

Pearson's correlations were determined to evaluate the presence of a possible relation between: interest profile and identity exploration, and also between personality characteristics, identity development, aptitudes and school performance.

To explore the predictive variants of school success, analyses of hierarchical regression for separate blocks were used: sex, age, SES, and school in the first block; aptitudes in the second block; interests in the third block; and decisional styles in the fourth block.

A multi-level regression analysis was performed because there was a set of hierarchical data; the data could be considered at anamnestic level (sex, age, socio-economic status), school (aptitudes), and individual level (interests and decisional style). Each block of independent variables was evaluated in terms of what it added to the explanation of the variability of the dependent variable at the time of its entry, evaluating the weight of all predictors.

Confirming the literature, to measure school success, the demographic variables (sex, age, SES) were those that had greater weight in the regression equation, after the attitudinal ones, that could predict school performance but not professional success,⁴⁶ and then interests and decisional style.²⁷ In fact, the European data show us that males tend to repeat school years more frequently than females; further, females' advantage in reading remains present in schools and the sex gap is statistically significant in favor of females; in contrast, in math and science, females tend to perform at lower levels than the males. To these variables, we added interests, which contribute to school success and to stability in courses of study, and which can also explain the phenomena of school abandonment, because the lack of awareness of adolescents' own interests and the consequential decisional disorientation can lead to a general divestment from school activities.⁴⁷

Preliminary analyses

From the analysis of the frequency distribution on the basis of identity development, the following emerged: 28.06% of the students were identified as having a foreclosure identity status, followed by 26.14% with a diffusion status, and 25.66% with a moratorium status; there were no significant differences due either to the sex variable ($\chi^2_{(3,417)}=2.22$, $P=0.53$) or the age ($\chi^2_{(3,417)}=3.50$, $P=0.32$).

MANOVA was done to verify the influence of the independent variables on interests, the aptitude profile, and the decisional style used. The MANOVA emphasizes a main effect linked to the sex variable (Wilks's lambda =0.89; $F_{(16, 398)}=18.94$; $P<0.01$) and an effect due to age (Wilks's lambda =0.57; $F_{(16,398)}=3.04$; $P<0.05$), and no effect of sex * age interaction (Wilks's lambda =0.97; $F_{(16, 398)}=0.74$; $P =$ nonsignificant [ns]). The breakdown of the univariate effects shows differences with respect to the sex variable: in the dependent decisional style ($F=9.93$; $P<0.01$) and in realistic interests ($F_{(1,416)}=158.92$; $P<0.01$), investigative interests ($F_{(1,416)}=7.64$; $P<0.01$), artistic interests ($F_{(1,416)}=16.40$; $P<0.05$), social interests ($F_{(1,416)}=54.03$; $P<0.01$), enterprising interests ($F_{(1,416)}=37.65.40$; $P<0.01$), and conventional interests ($F_{(1,416)}=47.10$; $P<0.01$). Specifically, males obtained significantly higher values than females in the realistic domain (males: $M=21.03$, $SD=9.82$; females: $M=10.82$, $SD=6.27$), the enterprising domain (males: $M=25.70$, $SD=10.56$; females: $M=20.77$, $SD=9.55$), and the conventional domain (males: $M=23.13$, $SD=10.43$; females: $M=16.66$, $SD=9.73$). Females achieved higher average scores than males in the artistic and social domains; they also seemed to manifest a greater tendency to ask others for advice and to be

strongly committed to choice compared with males of their own age, although such differences were not significant. With reference to the age variable, the breakdown of the univariate effects shows differences in social interests ($F_{(1,416)}=0.19$; $P<0.05$), the use of the spontaneous choice modality ($F=0.06$; $P<0.01$), logical-mathematical skills ($F_{(1,416)}=22.16$; $P<0.01$), and visual-spatial skills ($F_{(1,416)}=5.19$; $P<0.5$). In particular, younger students obtained higher average scores in social preferences; they also tended to make more use of the spontaneous decisional style ($M=29.93$, $SD=9.15$) compared with students aged between 18 and 19 ($M=21.74$, $SD=8.90$).

MANOVA was done to verify the influence of sex and age on the ideological and interpersonal domains of identity, and emphasized the main effect of sex (Wilks's lambda =0.92; $F_{(8,406)}=4.26$, $P<0.001$), but there was no effect due to age (Wilks's lambda =0.99; $F_{(8,406)}=0.79$, $P=ns$). The breakdown of the univariate effects shows differences compared with the sex variable in the dimensions of politics ($F_{(1,416)}=4.47$, $P<0.05$), work ($F_{(1,416)}=7.54$, $P<0.01$), religion ($F_{(1,416)}=5.60$, $P<0.05$), and friendship ($F_{(1,416)}=11.42$, $P<0.01$): males got higher scores in the dimension of politics and of career, while females presented higher average scores in the domains of religion and friendship.

Pearson's correlation was done to measure the relation between interests and independent variables. The correlation analysis shows SES is positively correlated with a predilection for the professional area of an investigative type and negatively correlated with social and conventional areas (Table 1); hence, adolescents coming from better socioeconomic contexts were oriented toward investigative professions and did not have a preference for social professional or conventional activities. Adolescents with better school performance also showed greater coherence of occupational preferences. The number of absences positively correlated with realistic and enterprising interests, and negatively with investigative interest; school performance only seems positively correlated with the area of investigative type and negatively with the realistic and enterprising ones.

The same analysis of correlation between decisional style and independent variables shows the absence of correlation between number of absences and modality of choice (Table 2). The number of permissions appears correlated with the spontaneous decisional style; such behavior does not seem the result of a rational decision. There is a positive correlation between scholastic success and rational decisional style; that is, a high evaluation in the passage from the third to the fourth year or from the fourth to the fifth school year

Table 1 Correlations among interests, socioeconomic status (SES), number of absences, permissions, and school performance in the group of students

Measure	R	I	A	S	E	C	Profiles	Consistency	Congruence	Differentiation	SES	Absences	Permissions	Performance
R		0.28**	0.10**	-0.07	0.36**	0.43**	0.61**	0.18**	-0.16**	-0.21**	-0.07	0.16**	0.22**	-0.17**
I	0.28**		0.15**	0.05	0.05	0.18**	0.50**	0.18**	0.09	-0.04	0.15*	-0.19**	0.09	0.31**
A	0.10*	0.15**		0.34**	0.05	-0.05	0.45**	-0.06	0.10	-0.05	-0.04	0.02	0.14**	-0.02
S	0.07	0.05	0.34**		0.15**	0.05	0.42**	-0.21**	0.02	0.14**	-0.14*	0.05	0.06	-0.02
E	0.36**	0.10	0.05	0.15**		0.75**	0.72**	0.13**	-0.17**	-0.15**	0.08	0.15*	0.22**	-0.13*
C	0.43**	0.18**	-0.05	0.05	0.75**		0.71**	0.81**	-0.14**	-0.20**	-0.11*	0.07	0.12*	-0.03
Profiles	0.62**	0.51**	0.45**	0.42**	0.72**	0.71**		0.14**	-0.08	-0.16**	-0.08	0.08	0.20**	-0.02
Consistency	0.18**	0.18**	-0.06	-0.21**	0.13**	0.21**	0.14**		-0.09	-0.10**	0.05	0.02	0.00	0.02
Congruence	-0.16**	0.09	0.10	0.02	-0.17**	0.14**	-0.08	-0.09		0.09	0.09	-0.04	-0.04	0.16**
Differentiation	-0.21**	-0.05	0.06	0.14**	-0.15**	-0.20**	-0.16**	-0.10**	0.09		-0.01	-0.05	-0.10	0.07
SES	-0.07	0.15**	-0.04	-0.14**	-0.08	-0.11*	-0.08	0.05	0.09	-0.01		-0.10*	0.07	0.17**
Absences	0.16**	-0.19**	0.02	0.05	0.15**	0.07	0.08	0.02	-0.04	0.05	-0.10*		0.39**	-0.23**
Permissions	0.22**	-0.09	0.14**	0.06	0.22**	0.12*	0.20**	0.00	-0.04	-0.09	-0.07	0.39**		-0.28**
Performance	0.17**	0.31**	-0.02	-0.02	-0.12*	0.03	-0.02	0.02	0.16**	0.07	0.17**	-0.23**	-0.28**	
M	15.57	21.34	19.72	25.73	23.63	19.68	125.68	2.59	2.90	2.85	1.92	2.96	2.25	7.07
SD	9.95	10.15	10.26	9.44	10.72	10.82	35.24	0.64	1.00	1.40	0.91	1.06	1.93	1.15

Notes: The research involved 417 Italian students (197 males and 220 females), in the fourth year (M=17.2, SD =0.52) and the fifth year (M=18.2, years, SD =0.64) of senior secondary school, who live in Enna, a small city in Sicily. The research lasted for 1 year and the group of participants was identified by simple random selection. * $P < 0.05$, two-tailed; ** $P < 0.01$, two-tailed; r, Pearson's correlation coefficient. **Abbreviations:** A, artistic; C, conventional; E, enterprising; I, investigative; M, mean; R, realistic; S, social; SD, standard deviation.

seemed influenced by the tendency to make decisions in a rational way; by contrast, final school performance seemed negatively correlated with the intuitive style and the spontaneous one.

Results

MANOVA was done to verify the influence of identity development on interests (level of differentiation, coherence, stability of interests, and general profile): the MANOVA only emphasized the main effect of identity on the general profile of interests ($F_{(3,413)}=13.83, P < 0.001$) and the level of differentiation ($F_{(3,413)}=2.77, P < 0.05$) but no effect on level of coherence ($F=0.21, P=ns$) or stability ($F=1.83, P=ns$). The breakdown of the univariate effects shows that students with an achievement status presented higher scores in the general profile ($M=3.78; SD =0.14$) and differentiation of interests ($M=3.12; SD =1.37$), while adolescents with a moratorium identity status presented lower average scores in the general profile ($M=2.94; SD =0.13$) and differentiation of interests ($M=2.54; SD =0.12$). Therefore, the research hypothesis appears confirmed. ANOVA shows the significant effect of identity development on the avoidant style ($F_{(3,416)}=4.40; P < 0.01$): the breakdown of the univariate effects shows that adolescents with a diffusion status obtain the highest scores in the avoidant choice modalities (Table 3).

Pearson's correlation analysis, confirming the research hypothesis, shows investigative personality correlates positively with the rational decisional style and negatively with the spontaneous one, but, above all, with high levels of school performance in all subjects; the artistic personality correlates with the spontaneous style and identity exploration; and social personality correlates with the use of the spontaneous style and the intuitive style, a high-profile identity, and exploration (Table 4).

The analysis of hierarchical regression with separate blocks shows that bringing aptitudes and the identity profile into model had no significant effect, although 20% of the variance is accounted for by the remaining variables, which, in order of importance, are: father's academic qualification ($\beta=0.24$), realistic interests ($\beta=-0.23$), investigative interests ($\beta=0.22$), and the intuitive decisional style ($\beta=-0.13$).

Predictors of level of performance in the scientific area are language aptitudes and anamnestic aptitudes, investigative interests, and enterprising interests (31% of the general variance) (Table 5).

Predictors of language competences are realistic interests ($\beta=-0.27$) and investigative interests ($\beta=0.18$), accounting for only 18% of the variance.

Table 2 Correlations among decision-making style, socioeconomic status (SES), number of absences, permissions, and school performance in the group of students

Measurement	Rational style	Intuitive style	Dependent style	Avoidant style	Spontaneous style	SES	Absences	Permissions	Performance
Rational style	–	–0.01	0.11*	0.05	–0.26**	–0.07	0.02	0.03	0.10*
Intuitive style	–0.01	–	0.05	0.06	0.44**	–0.03	0.09	0.02	–0.10*
Dependent style	0.11*	0.05	–	0.33**	–0.07	–0.04	–0.04	–0.07	0.02
Avoidant style	0.05	0.07	0.33**	–	0.27**	0.06	0.04	0.02	–0.03
Spontaneous style	–0.26**	0.44**	–0.07	0.27**	–	–0.06	0.08	0.10*	–0.10*
SES	0.07	0.03	0.04	0.06	0.07	–	–0.10*	–0.07	0.17*
Absences	0.02	0.09	–0.04	0.04	0.08	–0.10*	–	0.39**	–0.23**
Permissions	0.03	0.02	–0.07	0.02	0.10	–0.07*	0.39**	–	–0.28**
Performance	0.10*	–0.10*	0.02	–0.03	0.10*	0.17*	–0.23**	–0.28**	–
M	3.55	3.22	3.00	2.14	2.33	1.92	2.96	2.25	7.10
SD	0.74	0.66	0.75	0.79	0.77	0.92	3.06	2.93	1.15

Notes: For all scales, higher scores are indicative of more extreme responding in the direction of the construct assessed. The research involved 417 Italian students (197 males and 220 females), in the fourth year ($M=17.2$, $SD=0.52$) and the fifth year ($M=18.2$ years, $SD=0.64$) of senior secondary school, who live in Enna, a small city in Sicily. The research lasted for 1 year and the group of participants was identified by simple random selection. * $P<0.05$, two-tailed; ** $P<0.01$, two-tailed; r , Pearson's correlation coefficient.

Abbreviations: M, mean; SD, standard deviation.

The analysis relating to the technical area shows that about 25% of the variance can be accounted for by the rational decisional style ($\beta=0.17$), by logical-mathematical aptitudes ($\beta=0.19$), and visual-spatial aptitudes ($\beta=0.17$), and even more by identity commitment ($\beta=0.23$).

Finally, the analysis relating to the level of general performance, which altogether accounts for 24% of the variance, indicates the following among the predictive variables: father's academic qualification and mother's academic qualification, verbal memory, and the interests of investigative, realistic, enterprising, and conventional type. (Table 6).

The research hypothesis appears to be partially confirmed, because interests (realistic, investigative, and enterprising) and socio-economic status of parenting were predictive of school success but aptitudes and identity profile were not.

Discussion

The work presented here, starting from the limits and the external validity of Marcia's model, explored the relationship between the development of identity statuses and the

modalities to face the vocational choice, through the use of a particular decisional style.

Disconfirming the first hypothesis, identity development does not seem to influence the level of intelligence structure or aptitude, but, consistent with the literature, the assumption appears to be confirmed that adolescents with an achievement status show a broader profile of interests than students with a moratorium or diffusion status. Probably, the partial verification of the hypothesis is due to the age range of the interviewed students being characterized by instability in the development of identity, which is typical of adolescence.

The hypothesis appears to be confirmed that adolescents with a high profile of interests manifest a good level of identity exploration and likewise that adolescents with major differentiation of preferences present a strong commitment geared to identity development.

The correlations between GDMS and EIPQ confirm the third hypothesis, according to which adolescents with a low identity profile (diffusion status) tend to procrastinate making the most important choices in their life.

Table 3 Descriptive statistics: decision-making styles and identity status in the group of students

Measure	Achievement status		Moratorium status		Foreclosure status		Diffusion status	
	M (SD)	95% CI	M (SD)	95% CI	M (SD)	95% CI	M (SD)	95% CI
Rational style	3.61 (0.67)	3.47–3.76	3.55 (0.72)	3.42–3.69	3.55 (0.93)	3.38–3.72	3.50 (0.59)	3.47–3.61
Intuitive style	3.27 (0.71)	3.12–3.43	3.16 (0.61)	3.04–3.27	3.28 (0.66)	3.16–3.40	3.18 (0.66)	3.12–3.31
Dependent style	2.89 (0.73)	2.73–3.05	3.01 (0.82)	2.86–3.17	2.86 (0.79)	2.72–3.01	3.07 (0.64)	2.73–3.19
Avoidant style	2.32 (0.86)	1.93–2.31	2.31 (0.84)	2.15–2.47	1.94 (0.68)	1.82–2.06	2.19 (0.76)	1.93–2.33
Spontaneous style	2.48 (0.86)	2.29–2.66	2.27 (0.75)	2.12–2.41	2.28 (0.76)	2.14–2.42	2.32 (0.71)	2.29–2.46

Notes: The research involved 417 Italian students (197 males and 220 females), in the fourth year ($M=17.2$, $SD=0.52$) and the fifth year ($M=18.2$ years, $SD=0.64$) of senior secondary school, who live in Enna, a small city in Sicily. The research lasted for 1 year and the group of participants was identified by simple random selection.

Abbreviations: CI, confidence interval; M, mean; SD, standard deviation.

Table 4 Correlations between interests, decision-making styles, identity status, and aptitudes in the group of students

	R	I	A	S	E	C
Rational style	0.05	0.18**	0.07	-0.02	0.08	0.13**
Intuitive style	0.02	-0.07	0.09	0.10*	0.05	0.06
Dependent style	-0.10*	-0.07	0.03	0.06	-0.06	0.03
Avoidant style	-0.01	-0.04	-0.04	0.04	0.00	0.05
Spontaneous style	0.03	-0.11*	0.11*	0.11*	0.09	0.06
Exploration	0.00	0.02	0.22*	0.11*	0.04	-0.05
Commitment	0.02	0.01	0.09	0.06	0.06	0.00
Achievement	0.04	0.01	0.19**	0.19**	0.13**	0.07
Moratorium	0.01	-0.01	0.03	0.01	-0.02	-0.06
Foreclosure	-0.05	-0.01	-0.05	-0.05	-0.05	-0.05
Diffusion	0.01	0.02	-0.14**	-0.12*	-0.05	0.03
Human performance	-0.19**	0.20**	0.09	0.08	0.09	-0.11*
Scientific performance	-0.05	0.41**	-0.11*	-0.11	-0.12*	-0.06
Language performance	-0.19**	0.16**	0.01	-0.05	-0.09	-0.02
Technical performance	-0.03	0.25**	-0.10	0.00	0.05	-0.05
General performance	-0.17**	0.31**	-0.02	-0.02	-0.13*	-0.03

Notes: The research involved 417 Italian students (197 males and 220 females), in the fourth year ($M=17.2$, $SD=0.52$) and the fifth year (mean [M]=17.2, standard deviation [SD]=0.52) of senior secondary school, who live in Enna, a small city in Sicily. The research lasted for 1 year and the group of participants was identified by simple random selection. * $P<0.05$, two-tailed; ** $P<0.01$, two-tailed; r , Pearson's correlation coefficient.

Abbreviations: A, artistic interest; C, conventional interest; E, enterprising interest; I, intellectual interest; R, realistic interest; S, social interest.

Table 5 Model summary of hierarchical regression analysis that predicts the level of scientific performance in the group of students

Model	Variable	R ²	F change	B	β
1	SES	0.04	2.50	0.15	0.09
	Father's qualification			0.02	0.01
	Mother's qualification			0.23	0.13
	Father's job			0.02	0.02
	Mother's job			-0.01	-0.02
2	Word association	0.11	4.60	0.04	0.14*
	Math operation			-0.03	-0.09
	Cubic similarity			0.05	0.08
	Verbal memory			0.08	0.04
	Nonverbal memory			0.08	0.19**
3	Exploration	0.12	2.53	-0.02	-0.09
	Commitment			0.02	0.08
4	Realistic interest	0.30	12.77	-0.02	-0.15*
	Investigative interest			0.06	0.42**
	Artistic interest			-0.02	-0.13
	Social interest			-0.00	0.00
	Enterprising interest			-0.03	-0.24**
	Conventional interest			0.03	0.19
5	Rational style	0.31	1.14	0.17	0.09
	Intuitive style			0.05	0.02
	Dependent style			0.01	0.01
	Avoidant style			-0.08	-0.04
	Spontaneous style			-0.08	-0.04

Notes: * $P\leq 0.05$; ** $P\leq 0.01$. The research involved 417 Italian students (197 males and 220 females), in the fourth year (mean [M]=17.2, standard deviation [SD]=0.52) and the fifth year ($M=18.2$ years, $SD=0.64$) of senior secondary school, who live in Enna, a small city in Sicily. The research lasted for 1 year and the group of participants was identified by simple random selection.

Abbreviations: B, beta unstandardized coefficient; β , beta standardized coefficient; SES, socioeconomic status.

Further, confirming the research hypothesis, the adolescent with an enterprising personality profile shows a good level of general performance and a marked tendency to use a rational decisional modality, and the subject with an artistic personality is represented as the person that uses a spontaneous decisional style but with deep identity exploration. However, disconfirming the initial hypothesis, the adolescent with a realistic personality shows a low level of general performance but a high level of identity commitment.

The last research hypothesis appears to be partially confirmed that the variables predictive of success at school include SES, but only for the level of general performance and in the humanities area; the aptitude profile in all school subjects; the level of identity commitment, though only for the technical-professional area; the typology of realistic, enterprising, and investigative interests; and finally, the use of a rational decisional style. Therefore, conformism, pragmatism, and perseverance (typical of a realistic personality); ambition, optimism, and leadership skills (typical of an enterprising personality); and precision, introversion, and rationality (typical of an investigative personality) are predictive characteristics of school performance. Moreover, confirming the literature, among the causes of school dropout are internal and external factors to the subject and the school-training system. Among internal factors, there are sociocultural causes; that is, when a low level of education implies

Table 6 Model summary of linear regression analysis that predicts the general level of performance in the group of students

Model	Variable	R ²	F change	B	β
1	SES	0.07	5.72	-0.02	-0.02
	Father's qualification			0.21	0.15*
	Mother's qualification			0.17	0.12*
	Father's job			0.03	0.04
	Mother's job			-0.02	0.04
2	Word association	0.12	4.96	0.02	0.11*
	Math operation			-0.01	-0.04
	Cubic similarity			0.03	0.07
	Verbal memory			0.05	0.16**
3	Nonverbal memory	0.12	0.34	-0.00	0.08
	Exploration			-0.01	-0.04
4	Commitment	0.24	9.88	-0.00	-0.00
	Realistic interest			-0.02	-0.25**
5	Investigative interest	0.24	9.93	0.03	0.30**
	Artistic interest			-0.07	-0.01
	Social interest			-0.00	-0.03
	Enterprising interest			-0.02	-0.17*
	Conventional interest			0.02	0.15*
	Rational style			0.06	0.04
6	Intuitive style	0.24	0.93	-0.12	-0.07
	Dependent style			0.02	0.01
	Avoidant style			-0.08	-0.06
	Spontaneous style			0.00	0.00

Notes: * $P \leq 0.05$; ** $P \leq 0.01$. The research involved 417 Italian students (197 males and 220 females), in the fourth year (mean [M] =17.2, standard deviation [SD] =0.52) and the fifth year (M=18.2 years, SD =0.64) of senior secondary school, who live in Enna, a small city in Sicily. The research lasted for 1 year and the group of participants was identified by simple random selection.

Abbreviations: B, beta unstandardized coefficient; β, beta standardized coefficient; SES, socioeconomic status.

low expectations toward education and, therefore, academic success, and socioeconomic factors, when the professional status of the parents, their cultural situation, and their level of education can influence expectations of their children and the purpose of a successful school career.⁴⁷

There are innovative elements in this research that deserve further attention. First, today's assessment procedures should not be used for the purpose of classifying the personality, but to furnish the adolescent with useful information to stimulate in him or her self-discovery and the capacity to ask himself or herself some questions. In this context, in this research, the method of quantitative investigation was backed up by an idiographic procedure helping to favor an analysis of the roles taken on by adolescents faced with the decisional process.

It has been also demonstrated that identity development and individual characteristics, like aptitudes and sociocultural context, influence interests; this overcomes the limit of the classical literature, which shows that investigating

the structure of interests restricts the field of investigation, excluding the study of global phenomena like the process of identity formation.

In the sphere of research on decisional processes, the presence of individual differences constitutes a propensity to react in a given way in a specific context, and therefore they influence the modalities with which each individual makes choices in a relatively stable way. Nevertheless, although empirical studies^{48,49} have shown that individuals tend to use a certain style more frequently than others, the research reported here shows that decisional styles, far from being rigid and unchangeable, are flexible and modifiable in response to specific situations.

Limitations

Based on the results described herein, it is appropriate to emphasize the limits of this work, namely: the absence of a sampling method, which prevents the presence of a representative sample, the generalization of the results, and the external validity; and, in addition, the absence of a longitudinal-type study design, which is more suitable for research involving adolescents and their identity development.

Conclusion

In light of the presented results, it is necessary to stress the importance of coherence between interests expressed and measured competences for the purpose of planning a process of vocational counseling, thereby making the choice process effective and efficient. Indeed, it has been shown that a high interest profile is indicative of a good level of identity exploration and that differentiation of interests is indicative of the level of identity commitment.⁵⁰

Further, on the basis of the interests manifested by adolescents, it is possible to boost their effectiveness convictions; by increasing the range of their self-effectiveness convictions and their interests, adolescents can also increase their possibilities of choice.

In this context, economic changes and changes in the labor force of today's society, which often limit the vocational decisional process, stress the fact that not everyone can always make training or professional choices on the basis of their interests. In this regard, Holland's theory and its application can only help students to explore career choices within those professional alternatives that are feasible and available.

Hence, intervening in the development of the adolescent identity process proves to be fundamental for the purpose of increasing the aptitude profile and improving the level

of school performance, but, above all, for broadening the diversification and coherence of interests and improving the decisional process, since adolescents with a more evolved identity use a multiplicity of decisional styles that are well suited to contextual situations.

Disclosure

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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