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Keijzer, R.; Rijst, R.M. van der; van Schooten, E.; Admiraal, W.F.

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Individual differences among at-risk students changing the relationship between resilience and vocational identity

Rineke Keijzer [a,b,*], Roeland van der Rijst [a], Erik van Schooten [b], Wilfried Admiraal [a]

[a] Leiden University, Leiden, the Netherlands
[b] Rotterdam University of Applied Sciences, Rotterdam, the Netherlands

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ABSTRACT

The way at-risk students see themselves as workers, their vocational identity, is important for their career development. Special programs for heterogeneous groups of at-risk students in the Netherlands aim to foster students' vocational identity and their task may be eased by stimulating resilience. Therefore this cross-sectional study explored whether differences in at-risk students' individual characteristics moderate the relationship between their resilience and vocational identity. In general, resilient students often have strong vocational identities compared to less resilient students. However, the strength of the relationships vary with varying personal characteristics. Results enable educational programs to attune to at-risk students with the strongest relationships between resilience and vocational identity: males, younger subgroups, and those experiencing less motivation and low school engagement.

1. Introduction

Many if not all students who are in danger of dropping out of school, so called at-risk students, face obstacles both at school and in personal life. Brahm et al. (2014) and Sulimani-Aidan (2017) mention, for example, poor social support, chronic poverty, criminal surroundings, broken families, and the burden of young parenthood. These problems can deter at-risk students from attending school and may hinder graduation or continuing education. Educational programs therefore focus on developing a strong vocational identity for this group of students; they support their students in thinking about desirable careers with appropriate working behavior. Vocational identity refers to how a person views her or his occupational interests, abilities, goals, and values (Hirschi, 2012a; Turner et al., 2006). Vocational identity has been found to support career success and satisfaction (Skorikov & Vondracek, 2007). A strong vocational identity may help at-risk students to acquire a more valuable, independent, and sustainable position in society. For at-risk students developing a vocational identity is especially demanding due to the problems they encounter. Keijzer, Admiraal, van der Rijst, & van Schooten (2020) found that resilience of at-risk students is strongly related to their vocational identity.

Resilience might offer a buffer against difficult circumstances, as it enables a person to function in adversity. Coping with repeated exposure to difficulties may even reinforce resilience (Di Maggio et al., 2016). For at-risk students, resilience may result in, for example, persevering to study or work, even when faced with severe problems, such as an incident of violence in their neighborhood or stress caused by an addicted parent.

Special curricula at senior vocational schools and a rebound program in the Netherlands are attended by at-risk students. At the

* Corresponding author.
E-mail address: r.keijzer@hr.nl (R. Keijzer).

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senior vocational schools, students were educated at entry training level, the most basic level of this type of education. The goal of entry training was to enable students to continue in education or to start working. The rebound program prepared former dropouts to rejoin regular education, such as entry training, or to enter the labor market. Both programs intensively addressed the development of a vocational identity.

To inform special curricula about how to enhance their students' resilience and vocational identity, insights are needed into the relationship between resilience and vocational identity. But the at-risk student group is of a heterogeneous nature, faced with multiple problems. Potentially not all students will be helped with resilience. For example, for a strong vocational identity, strongly motivated students may need less resilience; they might compensate this lower resilience by firmer motivation. Lower motivated students, in contrast, might be in need of stronger resilience to obtain similar levels of vocational identity. This means that the relationship between resilience and vocational identity would be stronger for the lower motivated groups of at-risk students, with motivation as an individual characteristic that moderates this relationship.

Yet the way resilience is related to vocational identity may not be univocal and relationships might differ between different groups of at-risk students. In order to provide ample information for schools, teachers and mentors to adapt their education to their students, we need more knowledge about the relationship between resilience and vocational identity for the various subgroups. The aim of the current study is to provide insights into the moderating effects of individual differences among at-risk students on the relationship between their resilience and vocational identity.

2. Vocational identity

Vocational identity includes, at some point, a person's insights into her or his own career capabilities, goals, and expected success at work, labeled, respectively: vocational self-image (Who am I?), vocational future image (Who do I want to be?), and vocational self-efficacy (Am I able to get there?) (Keijzer, Admiraal, van der Rijst, & van Schooten, 2020; Fugate et al., 2004). This description of vocational identity, mainly expressing individuality, is not to deny it being developed and constructed in interaction with the environment. Positive or negative contextual influences may stimulate or impede career progress, such as support of parents and teachers of an instrumental or emotional type, and barriers caused by conflict, discrimination or discouragement (Brown et al., 2018). More emphasis on an intrapersonal approach, in contrast, is addressed in a review of Brown and Lent (2016) who concluded that vocational identity is related to feelings of *agency* through adaptability (i.e., the perceived ability to cope with unpredictable tasks within changing work conditions), *self-efficacy* (i.e., beliefs about personal capabilities), and *volition* (i.e., individuals' interpretations of their ability to make occupational choices despite constraints). Work conditions and constraints mentioned in these concepts refer to the relevancy of context. Sulimani-Aidan (2017) reported that limited personal assets narrow career paths. Her study among Israeli social workers who work with vulnerable youth showed that the realization of a vocational identity was a greater challenge for at-risk emerging adults than for young people in more favorable conditions. Sulimani-Aidan (2017, p. 150) concluded that "features of emerging adulthood as a period of exploring possibilities are not evident or very limited among at-risk young adults". More constraints, such as limited personal assets, may be associated with less work volition.

Developing a vocational identity is seen as essential for young adults (Skorikov & Vondracek, 2012; Zimmer-Gembeck & Mortimer, 2006). In a study among American urban high school students, Gushue et al. (2006) found that vocational identity was positively related to students' career decision-making, career-readiness, and career-decidedness. Several studies have suggested successful outcomes of vocational identity: It is connected to students' development towards required work attitudes and realistic expectations about careers (Turner & Lapan, 2013); to guidance in career opportunities (McArdle et al. 2007); and to flexible decision-making skills (Worth, 2002). In a German longitudinal study among high school students, Noack et al. (2010) showed that exploring vocational interests intensified when students attended higher grades and that this especially applied to students at low-track schools compared to peers from high-track schools. In a study located in the United States, Diemer and Blustein (2006)) found that during transitions vocational identity was especially valuable for urban adolescents of color from poor and working class neighborhoods, when they were exposed to surmountable sociopolitical barriers.

Bimrose and Hearne (2012) suggested that a series of transitions of work-places instead of one lifelong employment await all prospective employees. According to Blustein & Blustein (2013) and Brown and Lent (2016), the development of vocational identity has become more important because of the need to navigate volatile labor markets. This is acknowledged by at-risk youths themselves, as they anticipate being in less stable work than they would like, as shown in a study of Worth (2002) among middle school pupils in the United Kingdom. These changes place high demands on adaptability, self-efficacy, and volition. In a Canadian study among managers and professionals, Lyons et al. (2015) found that a successful route to dealing with career difficulties is to develop resilience, which is most probably even more important for at-risk students given their tough life circumstances.

3. Resilience

Resilience is the dynamic process of positive adaptation, despite experiencing adversity (Brownlee et al., 2013; Herrman et al., 2011; Luthar & Cicchetti, 2000). Resilience is considered to be moldable and may grow due to successfully adapting to barriers (Di Maggio et al., 2016). Several scholars have suggested that educational interventions targeting vulnerable groups should include efforts to foster resilience (e.g., Herrman et al., 2011; Jain & Cohen, 2013). Strategies to strengthen resilience relate to, for example, the development of social competence and increasing caring relationships (Brooks, 2006).

Two different aspects are distinguished in the concept of resilience: personal resilience and social resilience, although given different labels in different studies (Brownlee et al., 2013; Hjemdal et al., 2006). Personal resilience includes internal qualities and

refers to independence and self-sufficient decision-making in main domains of life, such as education, friends, and work, presuming a sense of self-efficacy, perceived control, and the capacity to regulate one's own life. This aspect of resilience relates to the agentic nature of vocational identity and individual volition in work. Social resilience is externally oriented and refers to having supportive social networks, and the ability and willingness to utilize them. This aspect will help at-risk youth in times of adversity and can support them in their search for the work that suits them best. In the study by Sulimani-Aidan (2017), social caseworkers stated that building formal social resources (i.e., connecting youth with services and programs) and informal social resources (i.e., learning to lean on their social networks) was critical for at-risk emerging adults for learning about new opportunities, becoming connected with services that could help them, and being supported in decision-making processes in important areas of life, such as education and work.

Previous research of Hjemdal et al. (2006) showed that boys reported significantly higher levels of personal resilience and girls reported higher levels of social resilience. A study of von Soest et al. (2009) among young adults between the ages of 18 and 20 years, showed no correlations of girls' and boys' age with personal or social resilience, small correlations of socioeconomic status, and very small to non-significant correlations of smoking, use of drugs, theft, and violent behavior with personal or social resilience. The Big Five personality traits (i.e., extraversion, agreeableness, conscientiousness, openness, and emotional stability) were found to variably contribute to resilience (Friborg et al., 2005; Herrman et al., 2011).

Stress factors such as low socioeconomic circumstances and living in deprived communities are part of the daily lives of at-risk students. Managing such stress factors, that is being resilient, acted as mediator between these circumstances and positive social, emotional, and academic outcomes, as reported in a review of 59 studies by Devenish et al. (2017). Nieuwenhuis et al. (2016) showed that resilient young Dutch adults were less strongly influenced by negative consequences of neighborhood poverty than their more vulnerable peers. In their study among high school dropouts, Bowers and Sprott (2012) found three different categories of students who would benefit from concordant different personalized approaches to prevent dropout, and for all subgroups resilience was found to be positively related to graduation. The importance of resilience in support of educational outcomes, such as academic engagement and achievement, was also shown by Martin et al. (2015). Their study showed that at-risk youth making use of educational or community services had significant lower resilience levels compared to peers who did not attend such services. In addition, for the latter group no interaction effect of resilience was found, whereas for the service-users resilience coincided significantly with educational outcomes.

Resilience has been intensively studied from career perspectives and was found to be related to career adaptability (Barto et al., 2015; Santilli et al., 2015). In the career construction theory of Savickas, career adaptability refers to "resources of individuals for coping with current and anticipated tasks, transitions, traumas in their occupational roles" (Savickas & Porfeli, 2012, p. 662). In Lapan's (2004) integrative contextual model of career development, developing resilience will enable youth to handle the demands of responsibility and self-determination needed for functioning in challenging and unpredictable work environments. A counseling intervention among poor inner-city youth, based on this integrative approach, was found to significantly and positively enhance social,

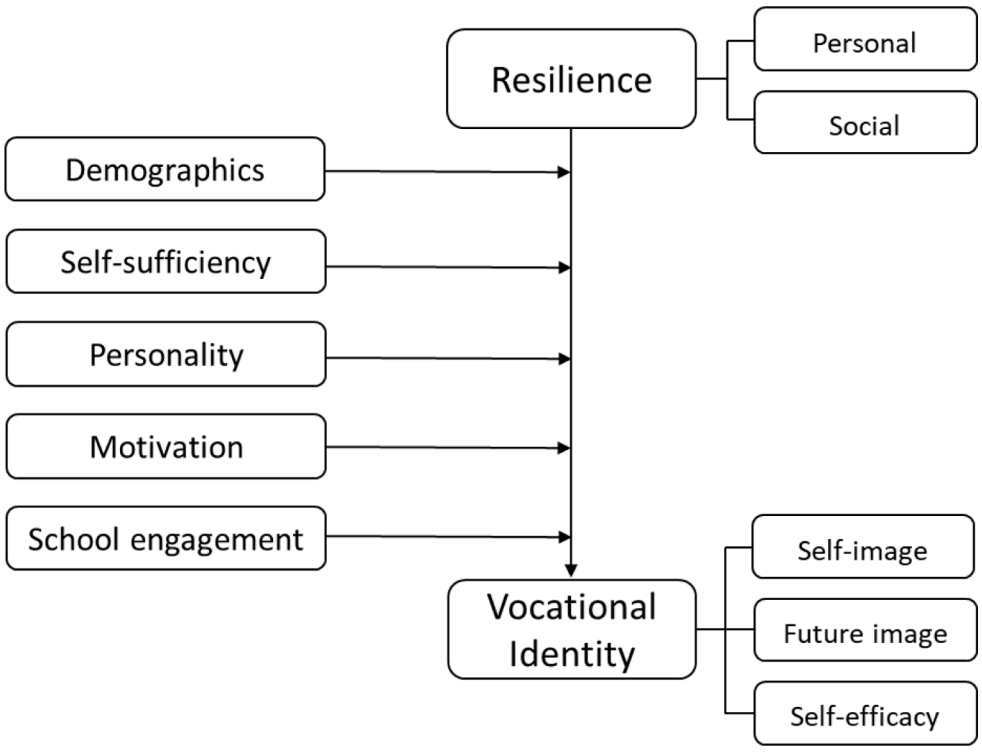

Fig. 1. Conceptual model in which individual characteristics moderate the relationship between resilience and vocational identity.

prosocial and work readiness skills, and emotional support (Turner & Conkel, 2010).

4. Current study

At-risk students' careers and societal positions receive considerable attention, especially at vocational schools and in rebound programs for vulnerable youth, which acknowledge the importance of developing a vocational identity. The population of at-risk students attending such programs is heterogenous and differs with respect to individual factors, such as sociodemographic characteristics, personality, and motivation for learning and work. As shown in the literature reviewed above, personal and social resilience appeared to be related to various individual factors as well as to the development of vocational identity (Keijzer, Admiraal, van der Rijst, & van Schooten, 2020; Hirschi, 2012b; Skorikov & Vondracek, 2012).

It may be assumed that the relationship between resilience and vocational identity gets stronger as adversity and difficulties of at-risk students increase, and weaker as obstacles decrease. In fact, a direct link between resilience and vocational identity may not provide a valid representation with the reality of the heterogeneous composition of these groups. Subgroups of at-risk students may differ from each other in this respect and may need different intervention strategies. Yet, the question whether differences in student characteristics affect the relationship between resilience and vocational identity is under-researched.

This study explored the assumption that the heterogeneity of the at-risk students —combined with different levels of resilience— is of value for their vocational identity. We expect the relationship between resilience and vocational identity is not equally strong for all student groups and might be moderated by individual characteristics of the at-risk students. The conceptual model is illustrated in Fig. 1, with the individual characteristics as moderators at the left, resilience as the independent variable, and vocational identity as the dependent variable.

Building on the work of previous studies, several sociodemographic characteristics, personality traits, and indicators of self-sufficiency were included. Further, motivational and school engagement factors were included because they are considered to be malleable and can be applied by educational and social practitioners to have an impact on their students' vocational identities. Intrinsic and extrinsic motivation were involved (Chávez, 2016). Concerning school engagement, participants' sense of belonging at school and valuing school goals (i.e., obtaining a qualification) were distinguished. School engagement is understood to contribute to stimulating occupational interests, work skills, and career guidance during schooling (Elffers, 2012; Skorikov & Vondracek, 2012). Both motivation and school engagement were found to be related to vocational identity (Keijzer, Admiraal, van der Rijst, & van Schooten, 2020).

Based on previous literature, we anticipated at least major moderation effects related to gender, age, socioeconomic status, and self-sufficiency. First, as females reported to be less personally resilient, stronger personal resilience is assumed to have a greater impact on vocational identity for them compared to males. In turn, as males reported to be less socially resilient, it is assumed that the relationship between social resilience and vocational identity is stronger for males than for females. Second, we expect to identify age differences, such that for older subgroups, their levels of resilience are less relevant with respect to their vocational identity perception and for younger subgroups the relationship is stronger. Third, we assume at-risk students from lower socioeconomic backgrounds and those who report addictive or delinquent behavior to show stronger relationships; the value of resilience gets stronger as the at-risk

Table 1
Main background characteristics of participants ($N = 996$).

Background variable	Category	Proportion
Ethnicity	Dutch	.70
	Surinamese or Caribbean[a]	.11
	Other	.19
Ethnicity parents	Dutch	.25
	Surinamese or Caribbean	.25
	Other	.50
Education parents	No education	.08
	Primary school level	.08
	Secondary school or higher	.50
	Unknown	.33
Living conditions[b]	With mother	.51
	With father	.29
	With brother	.25
	With sister	.23
	Respondent on his/her own	.13
	With child(ren)	.10
Police	Previous contact	.42
	Current contact	.08
Criminal justice[b]	No sanction	.58
	Community penalty	.21
	Juvenile measures	.13
	Detention	.11

a Former colonies of the Netherlands.
b Not adding up to 1 because combinations are possible.

Table 2
Descriptives of variables with example items and reliability of sums.

Cluster	Variable	Example item	*N*	Missings	*M*	*SD*	Final number of items in scale[a]	Cronbach's α	Range rit's[b]
Vocational identity	Vocational self-image	I know what I'm good at	873	123	4.10	.60	7 (1)	.82	.196–.702
	Vocational future image	I want to discover what kind of work I can do	896	100	3.53	.81	3 (1)	.64	.399–.517
	Vocational self-efficacy	Later on, at my work, I'll stick to the rules	892	104	4.51	.56	7	.92	.538–.839
Resilience	Personal resilience	I am sure I can care for myself well	831	165	4.07	.60	10	.90	.502–.758
	Social resilience	I ask for help if I need to	881	115	4.02	.74	8 (1)	.87	.505–.714
Motivation	Extrinsic motivation	I do my best because others want me to	928	68	2.81	.94	3 (1)	.68	.316–.601
	Intrinsic motivation	I do my best because I feel that's important	944	52	4.28	.67	3 (1)	.77	.546–.650
School engagement	Sense of belonging at school	I prefer being somewhere other than at school (R)	893	103	3.50	.84	5 (1)	.81	.498–.744
	Valuing school goals	I really want to graduate	890	106	4.41	.72	5	.88	.657–.774
Personality	Extraversion	I talk to a lot of different people at parties	895	101	3.43	.73	4	.62	.285–.470
	Agreeableness	I am kind to almost everyone	933	63	4.16	.61	3 (1)	.68	.419–.530
	Conscientiousness	I persevere until a task is finished	920	76	3.87	.58	4	.53	.230–.420
	Neuroticism	Sometimes I feel happy, sometimes I feel sad	936	60	3.06	1.07	2 (2)	.65	.476–.476
	Imagination	I come up with new ideas	908	88	3.61	.64	4	.48	.246–.349
Self-sufficiency	Self-sufficiency	How satisfied are you about what you do during the daytime?	925	71	3.69	.79	7 (1)	.84	.429–.735
	Addiction	How satisfied are you about the way you deal with drugs?	913	83	4.08	1.11	5	.90	.593–.859
Background	SES-following news[c]	I watch the TV news occasionally	913	83	0.12	.33	4	.70	.348–.649

a Final numbers. In parenthesis number of items per scale removed after CFA results.
b Item test correlations.
c Measured by four dichotomous items, summed and divided by four as one variable. All other variables measured by Likert-scales (range 1-lowest to 5-highest, and 3 as a neutral position).

students encounter more such adversities. Additionally, moderation effects are expected to be stronger for the at-risk students with lower levels of the personality traits, and with lower reported motivation and feelings of engagement to school.

The rationale for these anticipated moderation effects arises from the abovementioned differences among groups of students, and leads to the research question that directs this exploratory study: "To what extent do individual student characteristics moderate the relationship between personal and social resilience, on the one hand, and vocational identity, on the other hand?"

5. Method

5.1. Participants

Four institutions in the metropolitan area of Rotterdam, the Netherlands, were invited to participate, applying convenience sampling. Two institutions offered senior secondary vocational education at entry training level. The third institution was a rebound program, preparatory to senior secondary vocational education. The fourth institution was the community youth helpdesk, mainly visited by youths who were unemployed and had not graduated, and of whom many were sent back to school or to a special trajectory like the rebound program. These institutions were invited because they are all dedicated to optimizing future chances of at-risk young adults, labeled as 'at-risk students' in this study.

All four institutions agreed to participate. They were mainly situated in deprived neighborhoods. The community helpdesk had only one site; the institution running the rebound program had three sites; the two institutions for senior secondary vocational education were the largest in the area and had seven sites. From these institutions, 996 respondents participated, aged between 15 and 27 years ($N = 983$; $M = 21.7$; $SD = 3.34$). The sample consisted of 44% females. Other background characteristics of participants are reported in Table 1.

5.2. Measures

In addition to the background variables, the constructs included in the study were vocational self-image, vocational future image, and vocational self-efficacy, personal and social resilience, and twelve constructs that could possibly moderate the relationship between resilience and vocational identity. Among them were non-malleable characteristics: (1) the personality traits extraversion, agreeableness, conscientiousness, neuroticism, and imagination (Baay et al., 2014; Hirschi, 2012b; Skorikov & Vondracek, 2012), (2) self-sufficiency, which refers to the extent to which at-risk students report that they are satisfied about managing main domains of life. This included their self-evaluation of addictive behavior (Fassaert et al., 2014; Fouad, 2007; Heinrich & Holzer, 2011; Meeus et al., 1997), and (3) socioeconomic status (SES), measured by the extent to which participants followed news items. Malleable characteristics that were included concerned intrinsic and extrinsic motivation (Chávez, 2016), and sense of belonging at school and valuing school goals, which are understood as two aspects of school engagement (Elffers, 2012; Skorikov & Vondracek, 2012). Table 2 contains variables, example items, and an overview of descriptives of the constructs.

A paper-and-pencil questionnaire was developed with practitioners, and then piloted with some of the participants, discussed with them afterwards, and adapted according to their responses. Apart from the background variables, items were answered by means of Likert-scales. The questionnaire is included in Appendix A. Data were collected over a period of five months. Questionnaires were distributed at times and in settings that were most appropriate for a particular participant group. Participation was voluntary in all cases. Parental consent was obtained for the participants under eighteen.

The items for measuring vocational self-image, vocational future image, and vocational self-efficacy were adopted from the Career and Talent Development Self-Efficacy Scale of Yuen et al. (2010) and based on additional sources (de Vos & de Jong, 2011; Flouri & Buchanan, 2002; Jackson et al., 2011; Kuijpers & Meijers, 2008; Kuijpers et al., 2011; Nauta, 2010, 2002; Restubog et al., 2010). The measurement of the constructs of personal and social resilience was based on the validated Resilience Scale for Adolescents (Hjemdal et al., 2006; von Soest et al., 2009) and studies by Brahm et al. (2014), Heinrich and Holzer (2011), and Ungar et al. (2008). Items originated from the concepts of personal competence and social resources. Items for the personality traits, self-sufficiency indices, motivation, and school engagement were generated from validated questionnaires (Denissen et al., 2008; Donnellan et al., 2006; Elffers, 2012; Fassaert et al., 2014; Ryan & Connell, 1989).

5.3. Data analyses

5.3.1. Validity

The validity of the measurement of the 17 constructs was verified by means of confirmative factor analysis (CFA), using version 7 of the Mplus program (Muthén & Muthén, 1998-2015). A measurement model was fitted with 17 latent constructs and the scores on the items for measuring each of them as indicators of each construct. Because model fit initially was insufficient, out of the 104 original items, ten items of nine variables were removed based on large modification indices or residual variances. Fit indices of the final model were adequate ($N = 996$; $\chi^2 = 9328.021$, $df = 3266$, $p < .001$; CFI = .909, TLI = .903, and RMSEA = .043 with a 90% confidence interval of .042–.044). These indices indicated fair fit for CFI and TLI and close fit for RMSEA (Bentler, 1992; Hu & Bentler, 1999; MacCallum et al., 1996). All remaining items showed significant loadings on the construct they were intended to measure. These results supported the validity of the measurement of the 17 constructs.

5.3.2. Reliability

Mean scale scores were computed over the items remaining in the final model for each of the constructs in the CFA. To estimate the reliability of these mean scale scores, Cronbach's alpha was calculated for each construct (see Table 2). The alphas for conscientiousness and imagination were insufficient. The other alphas, ranging from .62 to .92, indicated reasonable to good reliability (Bryman, 2012).

5.3.3. Main effects and moderator analyses

In a previous study, data were used to conduct regression analyses to examine main effects of the included variables on the three components of vocational identity (Keijzer, Admiraal, van der Rijst, & van Schooten, 2020). Appendix B provides results of significant main effects. For the current study, we verified whether individual characteristics moderated the relationship between resilience and vocational identity. The moderator effects were estimated by means of multilevel regression analyses. Only characteristics that showed significant main effects on vocational identity were included, since the chance of finding moderation effects of variables showing a non-significant main effect is very small.

A moderation effect implies that an individual characteristic of the at-risk emerging adult significantly influences the relationship between resilience and vocational identity, making it stronger or weaker depending on the score on the student characteristic, i.e., the moderator variable. Moderation effects were analyzed by comparing two models: (1) a model with one of the three vocational identity components as a dependent variable, and one of the two resilience aspects and the individual characteristic as independent variables; and (2) the same model plus the interaction term between resilience and the individual characteristic. The interaction term represents the moderation effect. Significance of the moderation effect was calculated by computing the difference in deviance scores between both models, one with and one without the interaction term. The significance of regression coefficients was also calculated by means of the Wald-Z statistic. When the difference in deviance between two models appeared significant, effect-sizes were computed as the percentage of (total) variance explained by the moderation effect.

To evaluate significant moderation effects, the regression equation was used to make plots. Plots were made for mean values of both resilience and the individual characteristic, and the mean values, respectively, plus and minus one standard deviation. All continuous variables were grand mean centered before entering them in the regression analyses.

When necessary, regression analyses were conducted multilevel for the three aspects of vocational identity, because the data were nested within institutions and sites. For vocational self-image and vocational future image, the intraclass correlations for sites and institutions were non-significant, so moderation effects for these dependent variables were analyzed at student level only. For vocational self-efficacy, moderation effects of resilience with individual characteristics were analyzed at student and site level; the intraclass correlation for institutions was non-significant.

6. Results

Of the 101 moderation effects tested, 53 appeared significant: 25 for personal resilience and 28 for social resilience. Most effect sizes varied between 0.80 and 4.00 percent explained total variance. To compensate for capitalization on chance and to limit the results to meaningful effects, only effects equal to or greater than one percent are included in the findings section. Given the large

Table 3
Moderation effects (percentages of explained total variance) on Vocational self-image, Vocational future image and Vocational self-efficacy of Personal resilience and Social resilience moderated by Individual characteristics (effect sizes $\geq$ 1.00%).

	Personal resilience			Social resilience		
Individual characteristic	Vocational self-image	Vocational future image	Vocational self-efficacy	Vocational self-image	Vocational future image	Vocational self-efficacy
Gender			3.30	1.01		
Age				2.03		2.55
SES-following news			3.62			3.25
Self-sufficiency				1.99		
Satisfaction with addiction						1.80
Police contact			1.77			1.44
Detention			1.77			2.52
Agreeableness			8.50	1.11		7.23
Conscientiousness			1.00			
Neuroticism	1.59	1.86		6.31	1.44	
Imagination			2.23			3.31
Intrinsic motivation			4.10			3.21
Sense of belonging at school			3.11			
Valuing school goals			4.21			2.37
Personal resilience						3.56

number of variables that might affect vocational identity, one percent seems a reasonable, not too low, threshold. Table 3 shows results with an effect size of one percent or more explained total variance. Appendix C presents a condensed overview of all results. Appendix D contains plots for all significant results explaining at least one percent of total variance.

6.1. Personal resilience

The results of the moderator analyses showed that higher personal resilience scores were associated with higher vocational identity for all participant groups. Yet, the strength of the relationship between personal resilience and vocational self-efficacy varied: It appeared to be stronger for males, for participants with some contact with the criminal justice system, and for those who reported low values on other characteristics, except SES. The relationship between personal resilience and both vocational self-image and vocational future image was stronger for participants who reported lower levels of neuroticism. This will be further discussed in Section 7.

Fig. 2 illustrates two examples. The left-hand picture demonstrates the stronger relationship between personal resilience and vocational self-efficacy for males, compared to females. For the highly personally resilient respondents, no differences were found between males and females. The right-hand picture shows a stronger relationship between personal resilience and vocational self-efficacy for the participants with low intrinsic motivation as compared to highly motivated participants.

6.2. Social resilience

The results of the moderator analyses showed that higher social resilience scores were also associated with higher vocational identity for all participant groups, and again, that the strength of the relationship between social resilience and vocational identity varied. Concerning vocational self-image, it appeared to be stronger for males and for the more self-sufficient respondents. Regarding both vocational self-image and vocational future image this relationship was stronger for participants who reported lower levels of neuroticism. With respect to vocational self-image and vocational self-efficacy, it appeared to be stronger for the younger and for the less agreeable respondents. Finally, the relationship between social resilience and vocational self-efficacy appeared to be stronger for those with experiences in the judicial system, for the higher SES respondents, and for those who reported low values on other characteristics. Overall, the findings for social resilience closely resembled those for personal resilience.

Fig. 3 illustrates two examples of moderation effects of social resilience. The left-hand picture shows the stronger relationship between social resilience and vocational self-efficacy for the younger respondents, compared to their older peers. For the highly socially resilient respondents, no differences were found between different age groups. The right-hand picture shows a stronger relationship between social resilience and vocational self-image for the highly self-sufficient participants, compared to their less self-sufficient peers. Highly self-sufficient participants with low scores on social resilience assessed their vocational self-image to be lower than their less self-sufficient peers. Those highly self-sufficient participants who assessed their social resilience to be high reported a higher vocational self-image than the less self-sufficient at-risk students. This effect occurred within the range of plus and minus one standard deviation.

7. Discussion

This study showed that several individual characteristics of at-risk students moderated the relationship between personal and social resilience, on the one hand, and vocational self-image, vocational future image, and vocational self-efficacy, on the other hand. A high level of personal resilience or social resilience was associated with the best possible outcome on vocational identity for all student

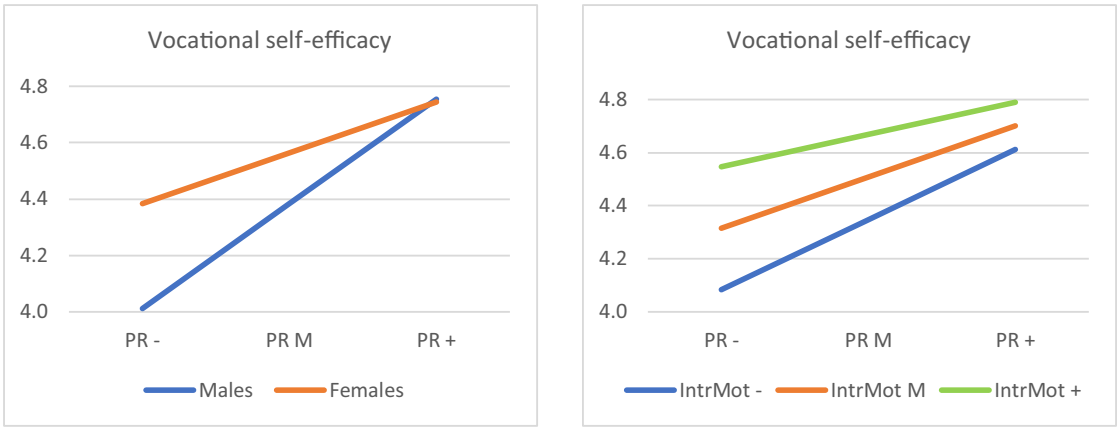

Fig. 2. Relationships between personal resilience and vocational self-efficacy moderated by gender (left-hand side) and intrinsic motivation (right-hand side) of at-risk students. *Notes*. PR = Personal resilience. IntrMot = Intrinsic motivation. - = 1 *SD* below mean. *M* = mean. + = 1 *SD* above mean.

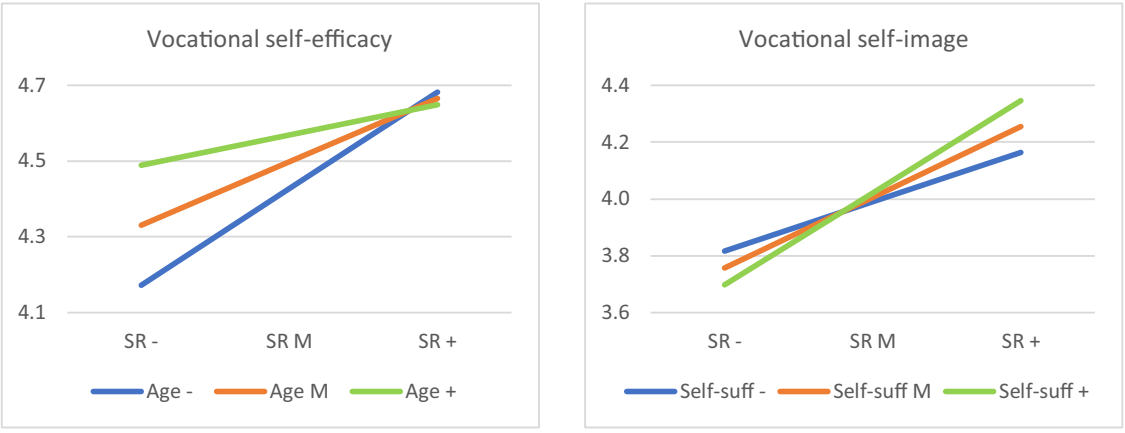

Fig. 3. Relationship between social resilience and vocational self-efficacy moderated by age (left-hand side) and relationship between social resilience and vocational self-image moderated by self-sufficiency (right-hand side) of at-risk students. *Notes*. SR = Social resilience. Self-suff = Self-sufficiency. - = 1 *SD* below mean. *M* = mean. + = 1 *SD* above mean.

groups. Yet, the strength of the relationships varied depending on individual characteristics. Our general assumption that more obstacles related to a stronger relationship between resilience and vocational identity was identified regarding most individual characteristics of the at-risk students, such as judicial experiences, motivation, and valuing school goals. However, exceptions were found too: For SES and self-sufficiency, lower levels coincided with weaker relationships. In some cases, differences in vocational identity between high and low levels of the individual characteristics disappeared for the highly resilient at-risk students. For example, for the highly socially resilient respondents, no differences were found between males and females. This also applied to age, SES, imagination, and sense of belonging at school.

Our conclusion that at-risk students' individual characteristics can act as moderators refines existing literature, as previous studies have concentrated on main relationships between characteristics and vocational identity components (e.g. Gushue et al., 2006; Hirschi, 2012b; Noack et al., 2010; Sulimani-Aidan, 2017). By going one level deeper and examining moderation effects of individual characteristics of at-risk youth, our findings contribute to the theoretical understanding and practical application of the strengths and strains of resilience.

Results between personal and social resilience show similar patterns, which contradicts our assumption with respect to gender. Gender did operate as a moderator, though. Based on findings of Hjemdal et al. (2006) who reported higher personal resilience of males and higher social resilience of females, we expected a weaker relationship between social resilience and vocational identity for females compared to males and a weaker the relationship between personal resilience and vocational identity for males. However, in our study relationships between both personal and social resilience and vocational identity showed to be stronger for males. This may point to a more developed personal and social resilience of females in our sample. The effect may be attributed to these females being more or earlier mature compared to males. The different findings may also relate to the ages of the respondents: Respondents in the study of Hjemdal et al. (2006) were on average five years younger than those in ours. Other factors, not included in this study, might play a role too. It could be, for example, that males in our sample experience greater discouragement or prejudices, which may hinder them in developing resilience and vocational identity. Whether these suggestions can explain different findings might be subject of future research.

As expected, age moderated the relationship between resilience and vocational identity, in such a way that this relationship showed to be stronger for younger respondents. Previous scholars have argued that resilience is dynamic, since coping skills get more advanced during life (Jain & Cohen, 2013), especially for at-risk students who may encounter difficulties which they have to face and which urge them to positive adaptation (Di Maggio et al., 2016). Therefore, younger age represented larger risks. The moderation effects of age, for personal and social resilience, showed that older at-risk students reported less variation in resilience levels than their younger peers and that for younger respondents stronger relationships between resilience and vocational identity were found. We interpret this as relating to at-risk students' feelings of volition and self-agency (personal resilience) and relying on social networks outside the family (social resilience) as they grow older. Students at risk may gain such life experiences whereas students in mainstream education may less do so; after all, previous studies showed no main effects between age and resilience (von Soest et al., 2009). However, within these age groups differences may show up between males and females, as discussed above. Adequate explanations are lacking, underpinning at-risk students being an understudied group.

The personality traits, judicial experiences, intrinsic motivation, sense of belonging at school, and valuing school goals, operated as assumed: Lower levels of the characteristic coincided with stronger relationships between resilience and vocational identity. The concerning characteristics thus not only showed to be positively related to either vocational identity or resilience as shown previously (e.g., Bowers & Sprott, 2012; Devenish et al., 2017; Martin et al., 2015), they also acted as moderators to vary the strength of the relationship between resilience and vocational identity.

The moderation effect of SES, with high SES interpreted as an asset and not as an obstacle, contradicts our assumption that the

relationship between resilience and vocational identity gets weaker as obstacles decrease. Its results require to interpret previous research outcomes carefully. For example, Lindstrom et al. (2007) found that lower SES —compared to higher SES— related to higher vocational identity by motivating stable employment. Based on our findings, we can revise this. Their conclusion only applied to the less resilient at-risk students with low SES in the present study. For the highly resilient participants, no differences were found between those of low and high SES. An explanation for the lower vocational self-efficacy of the less resilient respondents of high SES compared to those of low SES might lie in high expectations the at-risk students experience from home or tough demands they put on themselves.

Though agreeableness showed the largest percentages of explained total variance (8.50 and 7.23, respectively), two other characteristics with large effect sizes were noticeable and might be more interesting because of their applicability in intervention strategies: intrinsic motivation and valuing school goals. Their changeability implies a potential choice to either boost the resilience factor or address the concerning characteristic or both. This freedom of choice enlarges opportunities to foster vocational identity. For instance, for the less resilient at-risk students with low scores on valuing school goals, both stimulating resilience and valuing obtaining a qualification could nourish their vocational identity.

To conclude, though higher resilience always coincided with higher vocational identity, a one-size-fits-all approach will not likely be applicable due to the variety in various characteristics among the at-risk group of students. Exclusive attention on resilience in favor of vocational identity risks overlooking differences between student groups in the relationship between resilience and vocational identity.

7.1. Limitations, strengths and future directions

This study has shown that including moderation effects of individual differences of at-risk students refines our knowledge about the relationships between resilience and vocational identity. The individual characteristics partly reinforced and partly contradicted our assumption that lower levels of them would be expressed in stronger relationships between resilience and vocational identity. It should be noted that for this exploratory study we examined one moderation effect at a time; no combinations of characteristics were included. Effects regarding gender might in fact be due to more constraints males experience. To enable interpretations of findings, theory should be developed about causal and proxy effects that need to be tested then. Subsequently, future research could investigate to what extent hidden variables, such as constraints in our example, might show to explain the moderation effect. This directly relates to another suggestion for future research. We intentionally restricted our study to intrapersonal aspects of at-risk students relating to their vocational identity. As mentioned before, contextual barriers and support also play important roles in constructing, expressing and developing a vocational identity (Brown et al., 2018), maybe even more so for the group of students at risk of dropping out.

Generalization of our results is limited due to the applied method of convenient sampling in a specific urban context. Nonetheless, youth with similar constraints to our sample of at-risk students do exist elsewhere. Replication of this study would thus be interesting to deepen our theoretical insights into effects of individual characteristics as moderators that can be incorporated in strategies to stimulate resilience.

The cross-sectional design of this study put some limits on its interpretations and practical implementation. We do not know how relationships between resilience and vocational identity would evolve over time and to what extent individual characteristics maintain this moderating effect. A longitudinal study could shed light on these questions, by measuring the included variables at multiple time points.

Likewise, no conclusions can be drawn about the effect of stimulating resilience on the vocational identity of the at-risk students. An experimental or quasi-experimental design might provide answers to the issue of what extent an elaborated curriculum and mentoring approach in an experimental condition would stimulate students' personal and social resilience. In the comparison condition, no specific changes would be implemented compared to the previous curriculum. Pretest and posttest measures, as well as fidelity checks, would need to be conducted to reveal possible differences in experimental and control conditions with respect to the at-risk students' vocational identity.

7.2. Practical implications

The challenges an at-risk student can encounter are of diverse nature and might lead to dropping out of school or even to potential social deprivation. As shown by Sulimani-Aidan (2017), limited personal assets among at-risk students narrow down career paths and frustrate developing a vocational identity. Several studies have shown the relevance of vocational identity in its contribution to creating and enhancing career opportunities (Diemer & Blustein, 2006; Gushue et al., 2006; McArdle et al., 2007; Skorikov & Vondracek, 2012; Zimmer-Gembeck & Mortimer, 2006). The same applies to resilience, since personal and social resilience reflect acting independently and acting within social networks, respectively, expressing agency and volition as important aspects of vocational identity (Brown & Lent, 2016).

Results of this study are of international relevance and may contribute to support at-risk students in developing a vocational identity. As resilience is malleable, it can be a useful construct for adapting educational and social practices (Di Maggio et al., 2016). The findings enable educational settings to improve and refine intervention strategies. Vocational schools and rebound programs could implement activities that encourage the development of personal resilience and social resilience to strengthen students' vocational identity, focusing on those subgroups that can be considered as representing largest risks, that is, those with the strongest relationships between resilience and vocational identity: males, younger subgroups, the at-risk students who are less agreeable, imaginative, emotionally stable, and conscientious, and those who are less intrinsically motivated and show less sense of belonging and valuing school goals.

To support the at-risk students in getting on track, that is, to (re)join education or to start working, educational and social practitioners might use the gained insights to tailor their efforts to their students. Though a higher level of resilience relates to a stronger vocational identity for all, strategies which focus on the needs of an individual at-risk student are more effective than general strategies focused on the complete group of students. Based on a careful profile, for example created by a questionnaire or interview, a suitable personalized approach can be developed. For example, our findings show that relationships between resilience and vocational identity are stronger for males compared to females. However, for those males reporting to be already highly resilient, furthering their resilience may be a second best option. Their profile might suggest other characteristics on which to select an alternative strategy.

Non-malleable characteristics and characteristics which are hard to change, such as age, socioeconomic status or delinquency, represent certain challenges. The traits measures by these variables can hardly or not be influenced: Age is a fact and having been sentenced cannot be reversed. Nonetheless, less or non-malleable characteristics should be taken into account in selecting a strategy to foster the vocational identity. The relationship between resilience and vocational identity showed to be stronger for those with experiences in the judicial system and students from higher SES. In contrast, students of lower SES or those without experiences in the judicial system, for whom the relationship between resilience and vocational identity was hardly affected, still might benefit from stronger resilience and stronger vocational identity. Again, their profiles may inform practitioners about characteristics that need support, such as motivation or a sense of belonging to school. Individual strategies may not only prove valuable for vulnerable youth in contexts of education and career-oriented programs, but also of community projects, welfare programs, sports clubs and the like.

8. Conclusion

To take account of the diversity of at-risk-students, precise and tailored treatments may effectively adjust to different needs of them. Individual student profiles could help practices to decide for whom of the individuals in this population interventions aimed at nourishing resilience and vocational identity may be most beneficial, which could, subsequently, help to avoid social disconnection. Hence, we recommend vocational schools and rebound programs to assess the variety of individual characteristics of their at-risk students, for instance, during intake procedures, and to monitor whether applying this knowledge could improve their resilience and vocational identity. In so doing, more opportunities emerge to reconnect at-risk students to education, work, and society.

Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.ijer.2021.101893.

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