The relationship between vocational interests and intelligence: Do findings generalize across different assessment methods?

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Abstract

The aim of this study was to further explore the relationship between vocational interests and intelligence. There is some evidence in literature on the stable relationships between vocational interests and intelligence (cf. Ackerman & Heggestad, 1997). It should be noted that the majority of the previous studies have only used questionnaires for the assessment of vocational interests. Thus, it is of interest whether the results are also stable when different assessment methods are used. Therefore, a nonverbal test was used in this study together with two questionnaires. Additionally, tests for general intelligence, verbal, numeric, and spatial ability, and memory were used. A sample of \( N = 138 \) persons was tested in a computerized setting. Results indicate that there is a positive relation between Realistic and Investigative interests and spatial ability. This result was found for both the questionnaires as well as the nonverbal test. Therefore, it can be assumed that this relation is stable for different assessment methods. The data is discussed with respect to current literature.

Key words: vocational interests; assessment of vocational interests; intelligence; RIASEC

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The purpose of this study was to examine the relationship between vocational interests (cf. Savickas & Spokane, 1999) and intelligence. This is an important research topic because the results are of special interest for many fields of applied psychology. Within Holland’s theory (1997) vocational interests are interpreted as an expression of personality. Accordingly, Holland suggests that interest inventories can be interpreted as personality inventories. Interest inventories are also treated in this way in career counseling (e. g., Holland, 1999; Savickas, 1995). The relationship between intelligence, personality, and interests is discussed extensively in Ackerman and Heggestad (1997), and the relationship between Holland’s theory and personality is summarized in Hogan and Blake (1999). Both personality and intelligence are used as predictors for school performance (e. g., Rindermann & Neubauer, 2001), academic performance (e. g., Lounsbury, Loveland, Sundstrom, Gibson, Drost, & Hamrick, 2003), job performance (e. g., Barrick, Mount, & Judge, 2001), and career and job satisfaction (e. g., Lounsbury, Gibson, Steel, Sundstrom, & Loveland, 2004). Understanding the relation between all of the constructs may be useful for improving the predictive validity of the measures. For example Fritzsche, McIntire, and Yost (2002) suggested that interests could be seen as moderators in the prediction of the personality-performance relationship. In the case of vocational interests, the relationship to intelligence is of particular importance for career counseling. Helping the client to choose an appropriate vocation or education can be best achieved by combining information from different sources. In this process performance and personality variables play a significant role in helping the career counselor assist the client with his/her career decisions (cf. Carless, 1999; Gottfredson, 2003; Rayman & Atanasoff, 1999).

The theory of vocational interests by J. L. Holland (1997). Holland’s theory of vocational interests (1997) is widely used in practice and in scientific work. Within this theoretical framework vocational interests are defined as an expression of personality. Holland describes Realistic (R), Investigative (I), Artistic (A), Social (S), Enterprising (E), and Conventional (C) interests (RIASEC). Each of these interest types is characterized by certain preferences for vocational activities. The following description of the types is according to Holland (1997, p. 21). A Realistic person prefers activities that entail the explicit, ordered, or systematic manipulation of objects, tools, machines, and animals (e. g., electrician or mechanic). The Investigative type is characterized best by a preference for activities that entail the explicit, ordered, or systematic manipulation of objects, tools, machines, and animals (e. g., biologist or medical technologist). An Artistic person prefers ambiguous, free, unsystematic activities that entail the manipulation of physical, verbal, or human materials in order to create forms of art or products. They also have an aversion to explicit, systematic, and ordered activities (e. g., writer or interior decorator). The Social type favors activities that entail the manipulation of others by informing, training, developing, treating, or enlightening (e. g., teacher or counselor). The Enterprising person is characterized by a preference for activities that entail the manipulation of others in order to attain organizational goals or economic gain (e. g., sales person or manager). Conventional persons prefer activities that involve the explicit, ordered, and systematic manipulation of data (e. g., bookkeeper or banker).

Structural assumptions. Holland postulates specific relations between the six interest dimensions. Within his theoretical framework the six themes are represented in a hexagonal structure. Here, interest dimensions that are adjacent to each other (R and I, I and A, A and S, S and E, E and C, C and R) should be more similar than those after the next (R and A, I
and S, A and E, S and C, E and R, C and I), and they should be more similar than those at opposite positions (R and S, A and C, I and E). This relation is summarized as the so-called calculus assumption. In career counseling this information can be used to further comment on the client’s interest structure. Specific interventions can be derived if the profile shows high scores in similar or in non-similar themes.

**Assessment of vocational interests.** The assessment of vocational interests has so far mainly focused on the use of questionnaires. The General Interest Structure Test (Allgemeiner Interessen-Struktur-Test, AIST, Bergmann & Eder, 2005) and the Explorix® (Jörin, Stoll, Bergmann & Eder, 2003) are based on Holland’s theory. An overview on inventories preferably used in the German-language area is given by Proyer (in press). Nonverbal tests are rarely used in research and practice. Toggweiler, Jungo, and Stoll (2004) discuss a non-verbal test (Foto-Interessen-Test [Picture Interest Inventory]; Stoll, Jungo & Toggweiler, 2006) that uses photographs of people doing vocational activities. The inventory allows the assessment of vocational interests in terms of Holland’s theory. It can be administered as a paper-pencil test only and is mainly used in Switzerland. However, the Picture Interest Inventory is a rare example of alternative measures for the assessment of vocational interests. The study by Toggweiler, Jungo, and Stoll shows that results are comparable to those derived from questionnaires. Similar findings for the comparison between a questionnaire and a nonverbal test are reported in Amelang, Schäfer, and Yousfi (2002) for tests measuring constructs derived from Murray’s (1938) set of needs.

**Vocational interests and intelligence.** Apart from literature that explores the relation between the big five-personality dimensions and the six types of vocational interests (e.g., DeFruyt & Mervielde, 1997; Larson & Borgen, 2002; Tokar & Swanson, 1995), or between personality and intelligence (e.g., Ackerman & Heggestad, 1997; Demetriou, Kyriakides, & Avraamidou, 2003; Sternberg & Ruzgis, 1994), there is also literature on relations between the six interest dimensions and abilities. Randahl (1991) reported positive correlations between verbal abilities and Investigative interests ($r = .22$) and Artistic interests ($r = .28$), respectively, and a negative correlation with Enterprising interests ($r = -.17$). Numeric ability correlated positively with Investigative interests ($r = .23$). Spatial ability was positively correlated with Realistic ($r = .34$) and Investigative interests ($r = .27$). Bergmann and Eder (2005) reported correlations between general intelligence and Realistic (between $r = -.19$ and $r = -.27$), Investigative ($r = .29$; see also Lowman, 1991), and Artistic interests ($r = .22$). With reference to Holland’s theory, Ackerman and Heggestad (1997) summarize that “(a) Spatial and Math abilities are associated with Realistic and Investigative interests (and Math [computation] is associated with Conventional interests), (b) Mechanical ability appears to be more highly associated with Realistic interests than Investigative interests, (c) Verbal abilities tend to be most highly correlated with Artistic and Investigative interests, (d) negative correlations tend to be found between ability measures and Conventional interests (except for Perceptual Speed/Math computation and Conventional Enterprising and between ability measures and interests), and (e) negligible or negative correlations tend to be found for Social interests and ability measures” (p. 236). These results seem to be stable across different studies. However, the results are based on the use of questionnaires. Therefore, it has to be investigated whether similar results can be obtained through different assessment methods. If so, it can be assumed that the relations reported in the literature reflect true relations and cannot be explained by a bias caused by the assessment method.
Aims of the present study

The main aim of the study at hand is to explore the relation between vocational interests and ability (general intelligence, verbal, numeric, and spatial ability, and memory). All results presented in the introduction were obtained by using questionnaires. Therefore, it is of interest whether these results are also stable for different assessment methods. In using a nonverbal interest inventory, it will be examined as to whether the pattern of correlations is different when a different assessment technique is applied. The motivation for the study can be summarized as the exploration of the stability of the described results for questionnaires and a nonverbal test. First, information on the convergence of the inventories used in the study will be given and, second, more specific hypotheses on the intelligence-vocational interests relation will be explored.

Based on these findings, the study at hand will test the following hypotheses.

H1: There will be significant correlations on a moderate to high level for each of the interest dimensions among the different interest inventories used in the study at hand.

H2: There will be significant correlations between intelligence and vocational interests. More specifically, it is expected that Realistic (H2a) and Investigative interests (H2b) will demonstrate a significant positive correlation with spatial ability. Furthermore, it is expected that verbal ability shows a significant positive correlation to Artistic (H2c) and Investigative interests (H2d). Additionally, it is expected that general intelligence will be significantly negatively correlated with Realistic interests (H2e), but will show significant positive correlations with Investigative (H2f) and Artistic interests (H2g).

Method

Sample

A sample of N = 138 subjects aged between 20 and 42 (M = 26.59; SD = 4.46) was collected. The sample consists of 39 males and 99 females. Participants were not paid for their services. They were recruited from University of Vienna and were mainly students from different faculties.

Measures

Allgemeiner Interessen-Struktur-Test (AIST; General Interest-Structure-Test; Bergmann & Eder, 2005). The AIST is a 60-item Holland-type interest questionnaire. Answers are given on a five point Likert-scale (from 1 = “I’m not interested in, I don’t like” to 5 = “I’m very interested in, I really like”). The items from the AIST are dealing with vocational activities. Sample items are “working with machines or technical equipment” (Realistic), “carrying out experiments in a laboratory” (Investigative), “designing things artistically” (Artistic), “looking after, taking care of people” (Social), “supervising the work of a group” (Enterprising), or “bookkeeping” (Conventional). The AIST is widely used in practice and in research (e.g., Heise, Westermann, Spies, & Schiffler, 1997; Rolfs & Schuler, 2002) in the German-language area. The manual provides conclusive information on its validity and
Vocational interests and intelligence shows acceptable indices of reliability. For this study the computerized version was used with norm data from the year 2003.

**IAcO-Questionnaire (IAcO-Q; Interest-Assessment computerized Objective Test-battery-Questionnaire; Proyer, 2006).** The IAcO-Questionnaire consists of 96 items and is based on Holland’s theory of vocational interests (1997). 16 items (vocational activities) for each of the six Holland-themes are presented on a computer screen and the subject has to specify whether he/she rates this activity as “interesting” or “not interesting”; neutral answers are not possible. Sample items are “reparieren” (to repair; Realistic), “forschen” (to research; Investigative), “musizieren” (to make music; Artistic), “pflegen” (to nurse; Social), “verkaufen” (to sell; Enterprising), and “verwalten” (to administer; Conventional).

**IAcO-Nonverbal test (IAcO-NV; Interest-Assessment computerized Objective Test-battery-Nonverbal; Proyer, 2006).** The IAcO-Nonverbal test consists of 60 pictures (ten for each interest dimension). The pictures show faceless hand-drawn figures in black and white performing vocational activities. Figure 1 shows a sample item from the IAcO-NV for Realistic interests.

As in the two questionnaires all items are presented on a computer screen and the subject has to specify whether he/she rates this activity as “interesting” or “not interesting”; neutral answers are not possible. Like the two questionnaires the nonverbal test allows for the assessment of vocational interests with respect to Holland’s theory. IAcO-Q and IAcO-NV were constructed as part of a test battery and can be administered together or separately. The rationale of the test construction and psychometric properties of the IAcO-Q and the IAcO-NV are presented and discussed in Proyer (2006).

**Intelligenz-Struktur-Analyse (ISA; Intelligence-Structure-Analysis; ITB & Gittler, 2004).** The ISA is an intelligence test battery that provides information on verbal intelligence functions (calculated from subtests “Completing sentences,” “Finding similarities,” “Inferring relationships,” and “Generic terms”), numeric intelligence functions (“Practical calculations” and “Continuing numeric series”), spatial abilities (“Recognizing dice” and “Assembling figures”), and memory (“Remembering products”). A total score for general intelligence is provided in addition. The test battery was constructed according to the tradition of tests derived from Thurstone’s model of intelligence. Psychometric properties reported in the

![Figure 1: Sample item from IAcO-NV (Realistic interest).](image-url)
manual show satisfactory reliability coefficients, and conclusive information on the validity of the test battery is given.

**Procedure**

Subjects are mainly students of departments of different faculties from the University of Vienna. An individual feedback on the test results was given as a reward for their participation. All data was collected in a computerized setting in the course of one session. The sample of \( N = 138 \) participants completed the three interest inventories and the intelligence test. The entire session took approximately 120 minutes.

**Results**

First, the correlational pattern between the three interest inventories will be presented for each interest dimension. Table 1 shows the correlation matrix.

Table 1 shows that all three interest inventories correlated significantly in a positive manner (between \( r = .42 \) and \( r = .75; p < .01 \)) within each interest dimension. Since the inventories converged well it can be assumed that they are all suitable for the assessment of vocational interests.

The \( T_2 \)-statistic by Williams (Steiger, 1980; Williams, 1959) was used to determine whether the correlations are significantly different. The question to be answered with this method is whether the correlation between the two questionnaires is higher than the correlation between a questionnaire and a nonverbal test. For each of the interest themes three pairs of correlations have to be considered. First, the correlation between AIST/IAcO-Q and AIST/IAcO-NV, second, between AIST/IAcO-Q and IAcO-Q/IAcO-NV, and, third, between AIST/IAcO-NV and IAcO-Q/IAcO-NV. For the **Realistic** interests the correlation between AIST/IAcO-Q was not different from the AIST/IAcO-NV correlation (\( p > .05 \)). The IAcO-Q/IAcO-NV was significantly higher than the AIST/IAcO-Q correlation (\( t = 3.25, p < .01 \)) as well as the AIST/IAcO-NV correlation (\( t = 2.59, p < .01 \)). Results were different for the **Investigative** theme. Here, the AIST/IAcO-Q correlation was significantly higher than the AIST/IAcO-NV correlation (\( t = 3.35, p < .01 \)) and the IAcO-Q/IAcO-NV correlation (\( t = 2.80, p < .01 \)). No significant differences were found when comparing the correlations between AIST/IAcO-NV and IAcO-Q/IAcO-NV (\( p > .05 \)). For the **Artistic** theme the AIST/IAcO-Q correlation was significantly higher than the AIST/IAcO-NV correlation (\( t = 1.93, p < .05 \)). There were no differences for the AIST/IAcO-Q and the IAcO-Q/IAcO-NV correlation (\( p > .05 \)). Again, the IAcO-Q/IAcO-NV correlation was significantly higher than the AIST/IAcO-Q correlation (\( t = 1.93, p < .05 \). For the **Social** theme the AIST/IAcO-Q correlation was significantly higher than the AIST/IAcO-NV correlation (\( t = 2.03, p < .05 \). The AIST/IAcO-Q correlation was significantly higher than the IAcO-Q/IAcO-NV correlation (\( t = 2.41, p < .01 \). No differences were found for the comparison of the AIST/IAcO-NV and the IAcO-Q/IAcO-NV correlations (\( p > .05 \). For the **Enterprising** theme the AIST/IAcO-Q correlation was not different from the AIST/IAcO-NV correlation (\( p > .05 \). The same holds for the comparison of the AIST/IAcO-NV and the IAcO-Q/IAcO-NV correlations. Significant differences were found with higher correlations for the IAcO-Q/IAcO-
NV when compared to the AIST/IAcO-NV ($t = 2.19$, $p < .01$). Finally, for the Conventional theme a significantly higher correlation coefficient was found for AIST/IAcO-Q correlation when compared to the AIST/IAcO-NV correlation ($t = 2.61$, $p < .01$) and the IAcO-Q/IAcO-NV correlation ($t = 2.28$, $p < .05$). No differences were found for AIST/IAcO-NV correlation when compared to IAcO-Q/IAcO-NV correlation ($p > .05$).

In summary, these results showed that the correlation between the two questionnaires was not higher in all RIASEC-dimensions than correlations between one of the questionnaires and the nonverbal test. Overall, the results indicate that the hypothesis H1 was supported.

Table 1:
Correlation coefficients for AIST, IAcO-Q and IAcO-NV.

<table>
<thead>
<tr>
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<th>AIST vs. IAcO-Q</th>
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<td>R I A S E C</td>
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<tr>
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<td>.29**</td>
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<tr>
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<tr>
<td>C</td>
<td>.02</td>
<td>.22**</td>
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</table>

Note: AIST = General Interest-Structure-Test; IAcO-Q = IAcO-Questionnaire; IAcO-NV = IAcO-nonverbal-test; R = Realistic; I = Investigative; A = Artistic; S = Social; E = Enterprising; C = Conventional; * = AIST vs. IAcO-Q significantly higher than AIST vs. IAcO-NV; ** = AIST vs. IAcO-Q significantly lower than AIST vs. IAcO-NV; A = IAcO-Q vs. IAcO-NV significantly lower than IAcO-Q vs. IAcO-NV; B = IAcO-Q vs. IAcO-NV significantly lower than IAcO-Q vs. IAcO-NV; C = IAcO-Q vs. IAcO-NV significantly lower than IAcO-Q vs. IAcO-NV; A = AIST vs. IAcO-Q significantly lower than IAcO-Q vs. IAcO-NV. * $p < .05$; ** $p < .01$.
Taking the whole correlational pattern into account it should be noted that the highest correlations were found in all cases for the main axis, indicating that the measures for equal interest dimensions converged best. The correlational coefficients for Enterprising and Conventional interests in the AIST/IAcO-NV and in the IAcO-Q/IAcO-NV correlation did not differ significantly ($p > .05$) from each other.

The main question of the study at hand is the relationship between vocational interests and intelligence. Therefore, the correlations with the intelligence scale are presented in Table 2.

Table 2 shows that significant correlations between spatial ability and Realistic (between $r = .18$ and $r = .40$, $p < .05$) and Investigative interests (between $r = .22$ and $r = .31$, $p < .01$) were found for all three-interest inventories. This supports hypotheses H2a and H2b. With regard to Realistic interests the correlation between the AIST and spatial ability was significantly higher than the IAcO-Q/S ($t = 1.68; p < .05$) and the IAcO-NV/S-correlation ($t = 2.23$).

Table 2:
Correlation coefficients for the interest inventories and the intelligence test in Holland’s six interest dimensions.

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<th>V</th>
<th>N</th>
<th>S</th>
<th>M</th>
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Note: AIST = General Interest-Structure-Test; IAcO-Q = IAcO-Questionnaire; IAcO-NV = IAcO-nonverbal-test; V = verbal; N = numeric; S = spatial; M = memory; Total = general intelligence.

* $p < .05$; ** $p < .01$
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The picture is different for the relation between Investigative interests and spatial ability because here the three correlations did not differ significantly (all $p > .05$). In addition, there were significant correlations between investigative interests and the total score from the ISA (general intelligence; from $r = .20$ to $r = .22$, $p < .01$) for all three inventories. This supports hypothesis H2f. The three correlations were not significantly different from each other (all $p > .05$).

None of the inventories showed significant correlations between Artistic, Enterprising, and Conventional interests and any of the ability tests. Therefore, H2c was not supported. The other results were less coherent. There was a significant correlation between the total score from ISA and Realistic interests from AIST ($r = .22$, $p < .01$) and the IAcO-Q ($r = .17$, $p < .05$). In H2e a negative correlation was expected, so H2e was not supported. Here, no significant differences between the three interest inventories and the relation between Realistic interests and the ISA-total score were found (all $p > .05$). Only in the nonverbal test there was a significant correlation between verbal ability and Investigative interests ($r = .18$, $p < .05$). Therefore, H2d was supported only in the case of the nonverbal test. However, the non-significant correlations did not differ significantly from the significant ones (all $p > .05$).

Only for Social interests from the AIST there was a significant correlation with verbal ability ($r = -.26$, $p < .01$), numeric ability ($r = -.26$, $p < .05$), spatial ability ($r = -.21$, $p < .05$), and the ISA-total score ($r = -.26$, $p < .01$). With regard to verbal ability the correlation AIST/V was significantly higher than the IAcO-Q/V-correlation ($t = 1.90$, $p < .05$) but not different to the IAcO-NV/V-correlation ($p > .05$). As for the numeric ability the AIST/N correlation was significantly higher than the IAcO-NV/N correlation ($t = 1.90$, $p < .05$) but not different from the IAcO-Q/N correlation. With regard to spatial ability the AIST/S correlation was significantly higher than the IAcO-Q/S correlation ($t = 1.77$, $p < .05$) but not different from the IAcO-NV/S correlation ($p > .05$). There was no difference in the correlations regarding numeric ability and spatial ability. As for the ISA-total score, the AIST/ISA-total score-correlation was significantly higher than the IAcO-Q/ ISA-total score-correlation ($t = 1.90$, $p < .05$) but not different to the IAcO-NV-total score-correlation ($p > .05$).

**Discussion**

There are reports in the literature on the fairly stable relationship between personality, interests, and intelligence (cf. Ackerman & Heggestad, 1997). In the majority of the studies that have explored these relations only questionnaires were used. While there is no doubt as to the usefulness of questionnaires for vocational interests in research and practical work, there is the danger that some of the results may be biased because of the unidimensionality of the methods used. Therefore, a nonverbal interest inventory was additionally used in this study in order to examine whether the results can be generalized when two different assessment methods are used.

*Convergence among the three interest inventories.* Results show moderate to high convergence between a nonverbal interest test (IAcO-NV) and two interest questionnaires (IAcO-Q, AIST). As the validity of the AIST has been supported in various studies (cf. Bergmann & Eder, 2005) it can be assumed that the other inventories are also useful for the assessment of vocational interests. Furthermore, it was shown that the correlations between the two questionnaires are not persistently higher than the correlations between the nonver-
bal test and one of the questionnaires. This indicates that the relation of vocational interests is similar when using different assessment methods. While highest correlations among the interest inventories were found in the main axis of the correlational pattern, the correlation coefficients for the Enterprising and Conventional interests in the comparison of AIST/IAcO-NV and IAcO-Q/IAcO-NV were virtually identical. This indicates that especially for the IAcO-Q and the IAcO-NV a further improvement in the test material is needed for a better differentiation between these two Holland themes.

Relation between general intelligence and vocational interests. The results regarding general intelligence were only partially replicated. Although Bergmann and Eder (2005) report a negative correlation for Realistic interests, it was shown as positive in the study at hand – for the AIST as well as the IAcO-Q. This result might have been influenced by the samples used in the two studies. The study reported by Bergmann and Eder (2005), conducted by Kirchler (1990), consisted of a sample of unemployed people, whereas the sample used for this study was made up of students (from different departments). On the one hand, it can be assumed that (mainly psychology) students show a greater interest in assessment and the tests used. On the other hand, the student sample should be more homogeneous regarding intelligence structure and age than the sample of unemployed people that usually consists of persons from different educational levels and age groups. This result was only found for the two questionnaires and not for the nonverbal test. Therefore, it might be possible that non-verbal test material is better suited for assessment within particular samples. Nonverbal tests are preferably to be used in samples with low verbal skills, minorities (e.g., Naglieri & Ronning, 2000), or in cross-cultural research (e.g., Paunonen, Ashton, & Jackson, 2001). On the other hand, questionnaires have shown to be a useful and economic approach in career counseling.

Additionally, it should be mentioned that the three correlation coefficients of the Realistic theme with the total score from the ISA did not differ significantly from each other, with only two out of three being statistically significant. However, statistical significance should not be the only criterion in this case because the correlation coefficients are all relatively low (all < .22 which means < 5% of shared variance for the variables), and therefore the practical implications of these results should not be overinterpreted. However, due to the fact that the sign of the correlation coefficients is contrary to the expected direction it is worth keeping this result in mind for future research projects.

While there was no positive relation between general intelligence and Artistic interests found in this study, the hypothesis on a positive correlation between Investigative interests and general intelligence was supported by the data. This result was found for all three interest inventories. Data from the student and the unemployed sample may converge better for these two interest dimensions as unemployed persons with high Investigative or Artistic interests are probably more similar to the student sample than the others. The correlation coefficients did not differ significantly from each other, which means that all three assessment methods were able to reflect this relation. There were no correlations between general intelligence and Social, Enterprising, and Conventional interests; this is consistent with the studies reported by Bergmann and Eder (2005). All in all, it can be said that the results are fairly similar to the ones reported in the literature. The only exception is the Realistic theme, where effects of different samples might be conceivable.

Spatial ability and vocational interests. The most interesting result regarding spatial abilities was that for all three interest inventories significant correlations for spatial ability
and Realistic and Investigative interests were found. This is congruent with findings reported by Randahl (1991). As this applies to the nonverbal test and the two questionnaires it can be assumed that this relation is stable across the different assessment methods. Further evidence is also found in occupational codebooks. Here, many occupations with Realistic or Investigative interests as the first position in their three-digit-code are related to spatial abilities. While the correlation coefficients did not differ significantly for Investigative interests (which means that the relation to spatial ability was reflected in the same way), the coefficients were different for Realistic interests. Here, the correlation between the AIST and spatial ability was significantly higher than for the IAcO-Q and the IAcO-NV (which did not differ from each other). It seems as though the items used in the AIST reflect spatial abilities in Realistic activities to a higher degree than is true for the IAcO questionnaire and nonverbal test. Therefore, it might be concluded that it is preferable to administer the AIST when dealing with clients who aspire to Realistic vocations, which demand a higher degree of spatial abilities. Results from the AIST also converge well with those of Randahl (1991) regarding the negative correlation between Social interests and spatial ability. This result was only found for the AIST. The AIST correlation coefficient for Social interests is also statistically higher than the coefficient for the IAcO-Q, while the two IAcO tests did not differ significantly.

Further results. Most interestingly, for none of the three interest inventories statistically significant correlations between Artistic, Enterprising, and Conventional interests and any of the ability tests were found. Ackerman and Heggestad (1997) described a tendency for negligible or negative correlations for Social interests and ability. Interestingly, a negative correlation was found for the AIST only. Additionally, a positive correlation between Investigative interests and verbal ability, as reported by Randahl (1991), was only found for the nonverbal test, although it should be mentioned here that the correlation coefficient for the IAcO-NV-test does not differ significantly from the two other correlation coefficients. A negative correlation between Social interests and verbal and numeric ability was found for the AIST. While all three correlation coefficients did not differ significantly from each other with regard to numeric ability, the AIST-correlation coefficient was significantly higher for verbal ability (whereas the IAcO-Q and the IAcO-NV did not differ significantly). Further research is needed to comment on the stability of these results that can only partially be explained by literature. However, one of the main results from the current study is that the nonverbal interest test showed, in general, relations to the intelligence test that were comparable to those of the questionnaires. Therefore, it might be concluded that there are reliable relations between vocational interests and ability that could be generalized across different assessment methods.

Conclusion. Overall, it should be mentioned that both career counseling and theoretical research in vocational interests would benefit from using a multimethod approach in the assessment process. In particular, for practical work the use of different assessment methods can be useful in developing new hypotheses on possible career choices fitting the interest structure of the client. Especially when results from a questionnaire and an instrument using a different assessment method do not converge it can be fruitful to discuss these differences that can open new perspectives to the client. Especially, the computerized nonverbal IAcO-NV can be seen as a useful addition in the field of interest assessment.

To summarize these results it can be said that the data supports the positive relation between spatial ability and Realistic and Investigative interests. This result was found in the
case of two questionnaires and a nonverbal test. Overall, the data correlates well with the literature. Therefore, the results can be interpreted as a contribution that supports the validity of the AIST and the other interest inventories (IAcO-Q and IAcO-NV).

References


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