

Characteristics Explaining HRD Effectiveness

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Data from seven surveys were analyzed to identify characteristics that have an impact on the effectiveness of HRD programs. Results indicate, that setting specific HRD objectives promotes HRD effectiveness more than the setting of general objectives, HRD people are more positive about HRD effectiveness than managers and personnel officers, in-company programs are less effective than individual ones, and that programs in the field of languages are perceived as more effective than programs in the field of management, communication, and commerce.

Keywords: Improving Training Results, Enhancing HRD Effectiveness

Managers are increasingly being made responsible for the performance results of their work organization, unit or department. One of the means of improving performance is to develop the competencies of their employees by means of training and other learning interventions. They will invest in such interventions - further referred to as training, or Human Resource Development (HRD) programs - if these have added value for their company; and work organizations are still making considerable investments in training (Van Buren, 2001). In this way they are indicating that they expect training to produce positive effects on the achievements not only of individual employees but also of separate departments and the entire organization. Managers, however, will certainly take a critical look at the results of training and will only be willing to opt for those training programs that are expected to produce positive effects. In other words, HRD will be seen more and more as an investment that should produce results (Wognum, 1994). Research into the effectiveness of HRD has, as a result, been given a significant impetus, certainly after it was estimated in literature that only between 10 and 20 per cent of the capital invested in HRD and learning interventions would lead to a lasting improvement in performance (e.g. Broad, 1997).

A major part of training and HRD interventions is bought in from outside training companies. These organizations provide training programs from which the purchasing companies expect positive effects. Training companies therefore aim to provide programs of a high quality. The 'Vereniging van Trainings- en Opleidingsinstituten in Nederland' [Association of Training and Education Institutes in the Netherlands] (Vetron) is an association of established training companies that considers quality to be of paramount importance. In order to be able to monitor this quality, Vetron asked the Faculty of Educational Science and Technology of the University of Twente to conduct an evaluation on its behalf. This involves a survey being carried out of the quality of the training companies that are affiliated to Vetron by means of a random sample of the client base of the companies concerned. Seven surveys were carried out, during the period 1993 up to and including 1999.

Research Question

In the above section it is indicated that Vetron has had seven surveys conducted of the quality of the HRD programs provided by its companies. The study presented in this paper relates to a further analysis of the data from all seven surveys. On the basis of the results, Vetron aims to increase the effects and thus the effectiveness of the training they provide, by improving characteristics that have an impact on the effects of HRD programs. This implies, that Vetron would like to gain an insight into characteristics explaining HRD effectiveness. The research question, therefore, runs as follows: Which characteristics explain the effectiveness of HRD programs carried out by Vetron training companies?

Conceptual Framework

The above stated research question elaborates on research that was carried out in previous years by the University of Twente, Faculty of Educational Science and Technology, Department of Educational Organization and Management

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(Wognum, 1999) and fits within the performance paradigm of HRD. According to Weinberger (1998), the performance paradigm of HRD holds that the purpose of HRD is to advance the mission of the organizational system. HRD efforts are intended to improve the capabilities of individuals working in the organization and enhance the organizational systems in which they perform their work. The primary outcome of HRD in this context is not just learning, but also performance at various levels (Holton, 2000). Kaplan and Norton (1996) suggest two categories of performance measures: the so-called drivers and outcomes. Outcomes measure effectiveness relative to core outputs of the system, sub-system, process or individual, whereas drivers measure elements of performance that are expected to sustain or increase system, sub-system, process, or individual ability and capacity to be unique for particular performance systems (Holton, 2000). Together, these drivers and outcomes describe the cause and effect relationships in organizations (Kaplan & Norton, 1996), which implies that drivers should predict future outcomes.

This theory fits well into the theory of HRD effectiveness, where HRD effectiveness is conceived as the extent to which HRD goals and objectives are achieved. (Wognum, 1999). This implies that, to define the level of effectiveness, HRD effects can be measured at three output levels (Holton, 2000; Wognum & Lam, 2000): the learning level (effects on knowledge, skills and attitudes), behavior level (effects on job behavior of individual employees) and results level (effect on the performance results of groups, departments or the company). The HRD effectiveness theory also points to a means-goals ordering that distinguishes between the ultimate criteria and the supportive, effectiveness-enhancing criteria. HRD effects can then be seen as ultimate criteria of HRD effectiveness, like Kaplan and Norton's output measures. Criteria such as the HRD process itself are seen as effectiveness-enhancing criteria (Scheerens & Bosker, 1997; Wognum, 1999), just like Kaplan and Norton's performance drivers. They explain, to some extent, HRD effectiveness. Gaining insight into these criteria is necessary, as a means of interpreting the effects of HRD.

Based on the above stated insights, Wognum (1999) identified the following characteristics, explaining HRD effectiveness.

Setting HRD Goals. In organizational effectiveness thinking, goals can be seen as the major defining factors of the effectiveness concept itself (Scheerens & Bosker, 1997). HRD goals will be developed during a strategic planning or strategic HRD alignment process (Wognum & Mulder, 1999). The word 'strategic' emphasizes the company perspectives and makes the link between HRD and organizational goals and objectives. Strategic alignment concerns a dynamic and interactive process in which HRD goals and objectives are formulated as part of an ongoing future company policy. This relates to the learning and development of individuals and groups of employees for the benefit of both the company and themselves (e.g. Garavan, Costine and Heraty, 1995). In much of the literature, it is assumed that the process of setting general goals and specific objectives for the organization's HRD programs is important to enhance HRD effectiveness. Wognum found in her study on strategic HRD alignment that this process does indeed have a positive effect on perceived HRD effectiveness (Wognum, 1999). If strategic planning resulted in the formulation of more specific objectives, the impact on perceived effectiveness would be even higher than in the case of general goals. It would be interesting to investigate whether setting or not setting goals for HRD projects that have been carried out by Vetrion companies has an influence on HRD effectiveness. In the process it would be important to examine whether it is the setting of specific goals that promotes HRD effectiveness more than the setting of general goals.

Involvement of Stakeholders. Strategic HRD alignment refers to the interrelationship between HRD representatives and relevant company employees at strategic, tactical and operational levels of the organization, the so-called HRD stakeholders. Each of these stakeholders or groups of stakeholders aims at particular effects with HRD interventions. Senior managers, for example, will put the functioning of the work organization first, whereas HRD officers are far more focused on the learning goals that the participants should have reached by the end of the HRD activity (Wognum, 1994). This stakeholder perspective can have an influence on the assessment of the HRD effectiveness realized. Earlier research results showed that stakeholder involvement in the strategic alignment process has a positive impact on perceived HRD effectiveness; supervising managers and HRD officers, however, perceive HRD effectiveness significantly higher than HRD participants do (Wognum & Lam, 2000). It is important therefore to investigate to what extent the position of stakeholders in the Strategic alignment process (e.g. training designer, participant, consultant) and the function they hold (e.g. director, divisional manager, HRD coordinator) makes a difference to actual or perceived HRD effectiveness.

Form of HRD Programs. The form of an HRD program is expected to influence HRD effectiveness (Wognum, 2001a). Depending on the kinds of organizational problems involved, a specific HRD program can be tailored or

customized for a specific company, or a standard or other 'off-the-shelf' program, suitable for any company or problem situation can be provided. The former program is mostly offered as a so-called in-company program; the latter is an individual program, open to employees from different companies. The study by Wognum (2001a) revealed that the perceived effectiveness of tailor-made programs was less than that of other program forms. This result was not expected. In-company programs were expected to be more effective than standard programs, because they are tailored to the specific situation of the company where the participants work. It would therefore be interesting to examine whether in-company programs, such as those delivered by Vetron companies, are more effective than individual, more standardized programs in which employees from different companies can participate.

Content Field of HRD Programs. All kinds of environmental forces affect the company, such as demographic, social, economic, ecological, technological, and cultural. Some of these forces have a direct or indirect impact on the company and its HRD function. The ever-increasing trend towards automation, robotics, and other advanced computer applications, for example, has resulted in technological modifications and changes within companies. These changes impel companies to train and develop their employees (Pettigrew, as cited in Garavan, 1991). The HRD function is obliged to deliver HRD programs that provide these workers with the required competencies. Environmental forces thus serve as the starting point for HRD, determining to a certain extent the content field of HRD programs. This 'content field' is also seen as a feature that will have an impact on HRD effectiveness. Automation programs, for instance, proved to be significantly more effective than social skills programs (Wognum, 1999). One possible explanation for this was the different nature of the knowledge and skills in each of the two programs mentioned. It would also be interesting to examine whether differences in HRD effectiveness for different content fields can be observed in the HRD activities carried out by Vetron companies.

Method

Sample. To investigate the research question and, more specifically, the influence of the characteristics identified in the previous section on HRD effectiveness, a data file was used containing data from more than 3,700 questionnaires that were completed in the period from 1993 up to and including 1999 in the context of the evaluation commissioned by Vetron. The data came from a random sample of the client base of - on average - forty training companies that are affiliated to the Vetron. These Vetron companies satisfy a number of requirements relating to professional competence, continuity, quality and method of working. A questionnaire was sent to this random sample, more than 6 months after the HRD activity had been completed. On average, the response percentage was 35%. The main reason for non-response was the fact that respondents were no longer in the employ of the organization involved, due to high turnover rates in the companies.

Data Collection. A questionnaire, which had been specially developed for the evaluation project commissioned by Vetron (Mulder, 2000), was used for gathering the data. This questionnaire was used to determine the quality of the performance of the HRD assignments by the commercial Vetron companies. The questionnaire contains questions about the respondent, about characteristics of the HRD assignment, about the setting of objectives, about the division of responsibilities, about the attribution of the results to the training company and, finally, questions about making agreements and adhering to these (Mulder, 2000). The questionnaire measures both characteristics that have a direct impact on HRD effectiveness and characteristics that could possibly be used as explanatory variables.

Measurement of HRD Effectiveness. The effectiveness of an HRD program is often not immediately measurable, which is why in this study the indicator developed in the context of the Vetron evaluation was used to measure HRD effectiveness (Mulder, van Ginkel & Nijhof, 1994). This Aggregated Impact Indicator (AII) is calculated from the total satisfaction about the assignment, the realization of expectations, the adjusted effect score, the making of agreements and the extent to which these are adhered to, and satisfaction with the implementation of the program. The adjusted effect score is calculated from the extent to which the objectives of the HRD assignment have been realized. In the process, adjustments are made to reflect the importance of the objectives, the extent to which the training company was responsible for achieving these objectives and the extent to which the respondent attributes the attainment of the objectives to the training company. A weighting factor was awarded to each of the characteristics of the effectiveness indicator, based on the results of a Lisrel analysis (Mulder, s.a.). The reliability and validity of this measure was tested by Mulder c.s. as sufficient (1994). Finally, we would like to remark that the AII does not thus measure actual HRD effectiveness but its effectiveness as perceived by the respondents.

One of the characteristics by which the All is calculated is the realization of expectations. Approximately a third of the respondents had not completed this question. There are different ways of dealing with missing values. Firstly, the decision can be made to use only complete cases, which means that the data from incomplete cases are not taken into consideration. Secondly, it can be decided to use the incomplete cases, and to complete them by imputation, meaning that a particular value is filled out instead of the missing values. The usual value for this is the random average (Little & Rubin, 1987). In this survey too, in order to be able to use the data from those respondents who had not stated to what degree their expectations had been realized, the average score for the realization of expectations was calculated and entered.

Predictive Variables. In the questionnaire for the evaluation commissioned by Vetron, several questions were also included relating to specific characteristics that have an influence on HRD effectiveness; the so-called predictive variables. This study examines whether a number of these variables can explain the differences in the All scores of the participants. To this end it will study whether there are significant differences between groups of participants when one of these variables is conditioned. On the basis of what is described in the 'conceptual framework' section, the impact of the following factors on the All score is examined:

Setting Training Goals. The study examines whether the setting or not setting of objectives for the HRD assignments has an impact on HRD effectiveness. The expectation is that setting objectives will have a positive impact on HRD effectiveness. The setting of specific objectives is expected to promote HRD effectiveness more than the setting of general objectives.

Involvement of Stakeholders. Another factor that will be examined in the study is the involvement of stakeholders in the HRD assignment. The position of respondents and the functions that they hold are expected to make a difference as regards actual or perceived HRD effectiveness. The questionnaire identifies the following positions: contractor, purchaser, adviser, co-developer, internal organizer/coordinator, participant, and the residual category 'other'. The respondent has the opportunity to indicate more than one position. As far as the function of the respondents is concerned, ten different categories of function are mentioned in the questionnaire, namely: director/works manager, line/departmental /divisional manager, head of personnel (sector/division), personnel officer, head of the HRD department, HRD officer, HRD coordinator within the HRD department, teacher/instructor/trainer, internal adviser, and external adviser. If the function of the respondent does not come under any of these categories, the respondent could fill out his function in the residual category 'other'.

Form of HRD Programs. In this study a distinction is made between in-company programs and individual programs. In-company programs are those that are specially made for a particular company, in which only employees from that company participate. In the case of an individual program, individual employees from different companies take part. The expectation is that in-company programs will be more effective, because they are tailored to the specific situation of the company where the participant works.

Content Field of HRD Programs. The field to which the program relates makes a difference to HRD effectiveness (Wognum, 1999). The questionnaire identifies ten different HRD fields, namely: languages, management, communication, commerce, employee participation, marketing, technology, automation, HRD theory, and other fields. It is thus expected that there will be a difference in HRD effectiveness between these fields.

Preparation of the Data. Before the analyses were conducted, the data file was adjusted on a number of points in order to be able to answer the research question. In the case of the question about the function of the respondent, it emerged that many people had indicated in the category 'other' that they were a member of the works council. For this reason, a separate function category, 'member of the works council' was added. Something similar occurred with the question about the content field of HRD. There proved to be many programs with the combination of management and communication; the combination of communication and commerce also occurred frequently. For this reason these combinations were added as extra categories. Based on the data received about the position of stakeholders, the respondents were divided into four groups according to the stage in which they had been involved in the HRD assignment. The first group consists of respondents who were only involved in the preliminary stages of the program: contractors, purchasers and advisers. The second group comprises respondents who were only involved in the actual implementation of the HRD assignment. This includes co-developers, internal organizers/coordinators and participants. The third group consists of respondents who were involved in both the preliminary stages and the actual implementation. The fourth group is made up of the remaining respondents, of whom it is not known in which stage of the HRD assignment they were involved. Phillips (1997) states that those people who were closely involved

in the implementation of the program are inclined to attribute all the changes or improvements in the participant's behavior to the program itself. People who are further removed from this are also able in their assessment of the program to take into consideration other factors that influence these changes or improvements. On the basis of this, those who were involved only in the actual implementation of the HRD assignment are expected to give a more positive assessment of HRD effectiveness than the rest.

Data Analysis. The data were analyzed with SPSS. The Independent Samples T-test was used to establish the difference between individual and in-company programs and the difference between setting or not setting goals in advance.

A One-way ANOVA was used to see if there was a difference between those who were only involved in the preliminary stages, those who were involved in both the preliminary stages and the actual implementation of the HRD assignment, those who were only involved in the actual implementation of the HRD assignment, and those of whom it is not known in which part of the HRD process they were involved. This also applies to the difference between the function of the respondents, the difference between the fields of HRD and the difference in the extent to which goals were set.

If significant differences between the groups were found in the analysis of variance, a Post Hoc analysis was conducted using the Bonferroni procedure to see which groups differed significantly from the others. This procedure compares the average of each group with every other group by means of a T-test.

All the analyses were conducted with a p-value of .05.

Results

The results of this study show which of the characteristics impact on the AII-score of the participants.

Setting HRD Goals. The AII-scores of the programs that set HRD goals are higher ($M = 65.4$, $SD = 12.8$) than the AII-scores of programs for which no objectives were set in advance ($M = 62.2$, $SD = 14.0$). The Independent Samples T-test indicates that this difference is significant, $t(2742) = -3.01$, $p < .003$.

Also investigated was whether the setting of general or more specific objectives has an impact on the AII-score. The results of the One-way ANOVA show that there is a significant difference, $F(4, 2496) = 32.851$, $p < .00$. In order to check to what degree of objective setting the AII-score differs, a Post Hoc analysis was conducted using the Bonferroni procedure. The results of this are shown in Table 1.

In Table 1 the AII-score of the type of objective from the first column is compared with the AII-score of the type of objective from the first row. The value that is shown in the table is the Mean Difference (MD). This MD was calculated by subtracting the average of the AII-score of the type of objective in the first column from the average of the AII-score of the type of objective in the first row. The significant differences from this column are marked with an asterisk.

Table 1. *Post Hoc analysis (Mean Differences) of the types of objectives affecting the AII scores.*

	Very general	General	Neither general nor specific	Specific	Very specific
Very general	-	-2.83	-2.45	-5.97*	-13.98*
General		-	.38	-3.14*	-11.15*
Neither general / nor specific			-	-3.52*	-11.53*
Specific				-	- 8.01*
Very specific					-

$p < .05$.

It can be deduced from Table 1 that the average AII-scores for the programs for which the objectives that were set are very general, general or neither general/nor specific are significantly lower than the average AII-scores for programs for which the objectives are specific or very specific. It is striking that the average AII-scores also differ significantly for programs in which the objectives that were set are specific and the programs in which the objectives that were set are very specific ($MD=8.01$, $p<0.000$).

Involvement of Stakeholders. The results of the One-way ANOVA showed that there is a significant difference between the different stages of involvement, $F(3, 2742) = 3.080$, $p < .026$. In order to check in which stages the effectiveness indicator differs, a Post Hoc analysis was conducted using the Bonferroni procedure. The results of this are shown in Table 2.

Table 2. *Post Hoc analysis (Mean Differences) of stage of involvement affecting the All scores.*

	Preliminary stages	Training program	Both	Unknown
Preliminary stages	-	.713	.002	5.36*
Training program		-	-.711	4.65
Both			-	5.36*
Unknown				-

$p < .05$.

Table 2 shows that those who were only involved in the preliminary stages are more positive about HRD effectiveness than are those of whom it is not known in which stage of the training process they were involved ($MD = -5.36$). This difference in average All-score is significant ($p < .025$). Those who were involved in the entire training process also assessed HRD effectiveness more positively than did those of whom it is not known in which stage of the training process they were involved ($MD = -5.36$). This difference too is significant ($p < .024$).

Subsequently, a one-way ANOVA analysis shows that there is a significant difference between the respondents when grouped on the basis of function $F(11, 2727) = 6.401$, $p < .00$. In order to check for which functions the average All-score differs significantly, a Post Hoc analysis was conducted using the Bonferroni procedure. Only the columns with significant results are shown in Table 3.

From Table 3 it can be deduced that the average All-score for the function of director/works manager is significantly lower than the average All-score for the head of the HRD department ($MD = -5.4$, $p < 0.000$), the HRD officer ($MD = -4.67$, $p < .000$) and the HRD coordinator within the HRD department ($MD = -5.07$, $p < .008$). Other significant differences were found between at one side the line manager, the personnel officer, and the category others, and on the other side the head of the HRD department, HRD officer, and HRD coordinator. The second group has significantly higher All-scores, which imply far more positive perceptions of HRD interventions.

Table 3. *Post Hoc analysis (Mean Differences) of the type of functions affecting All scores.*

	Head HRD dept.	HRD officer	HRD coordinator	Other
Director	-5.40*	-4.67*	-5.07*	-1.15
Line manager	-5.75*	-5.03*	-5.43*	-1.51
Head of personnel	-4.59*	-3.86*	-4.26	-.34
Personnel officer	-4.54*	-3.84*	-4.22	-.30
Head HRD dept.	-	.73	.33	4.24*
HRD officer		-	-.40	3.52*
HRD coordinator			-	3.92
Teacher				2.39
Internal advisor				1.68
External advisor				1.28
Other				-
Member works council				-

$p < .05$.

Form of HRD programs. The mean and the standard deviation for both groups were calculated to investigate whether there is a difference between the group of students who received an in-company program and those who received an individual program. The All-score for in-company programs ($M = 65.11$, $SD = 12.99$) is lower than the All-score for individual programs ($M = 66.35$, $SD = 14.95$). The Independent Samples T-test, however, indicated that this difference is not significant, $t(2413) = -1.644$, $p < .10$.

Content field of HRD Programs. It was investigated whether there is also a difference in the average All-score between the different content fields of HRD. The One-way ANOVA analysis reveals that here too there is a significant difference, $F(11, 2734) = 4.836$, $p < .00$. In order to check for which fields of HRD the average All-score differs, a Post Hoc analysis was conducted using the Bonferroni procedure. Only the column with significant results are shown in Table 4.

From Table 4 it can be deduced that programs in the field of languages are found to be significantly more effective than programs in the fields of management ($MD = 5.81$, $p < .000$), communication ($MD = 4.16$, $p < .003$), commerce ($MD = 6.66$, $p < .000$), participation in decision-making ($MD = 6.99$, $p < .000$), management and communication ($MD = 6.32$, $p < .017$) and programs from the residual category 'other' ($MD = 5.89$, $p < .000$).

Conclusion and Discussion

The goal of this study was to gain a greater insight into characteristics that explain, or influence, HRD effectiveness. Firstly, the influence of setting or not setting objectives in advance was studied. Here it was expected that setting objectives in advance would have a positive influence on the All-score. At the same time, the setting of specific objectives was expected to lead to a higher All-score than the setting of general objectives. The results of the analysis correspond with these expectations.

Table 4. *Post Hoc analysis (Mean Differences) of the types of content fields affecting All scores.*

	Languages
Languages	-
Management	5.81*
Communication	4.16*
Commerce	6.66*
Marketing	7.25
Technology	4.74
Automation	9.49
HRD Theory	4.82
Participation in decision making	6.99*
Other	5.89*
Management & Communication	6.32*
Management & Commerce	1.51

$p < .05.$

Another characteristic examined in the study was the involvement of stakeholders in the HRD assignment. It was expected here that those who were involved only in the actual implementation of the HRD assignment would give a more positive assessment of HRD effectiveness than would the other people involved. The results indicate that respondents who were involved only in the preliminary stages of the program were more positive about HRD effectiveness than were those of whom it was not known in which stages of the training process they had been involved. The respondents who were involved both in the preliminary stages and in the program itself also gave a more positive assessment of HRD effectiveness than did those of whom it was not known in which stages of the training process they were involved. It is striking that no significant differences were found with the respondents who had been involved only in the program itself. This is probably due to the relatively small size of this group of respondents. A follow-up study in which more respondents from his group are involved may well produce significant results.

The function of the respondent was also considered, and here it was expected that there would be a difference in All-scores between the function categories distinguished, due to the different perspectives of those involved. Those who are directly involved in the programs will look mainly at the program itself, how it progressed and whether the learning objectives of the program were attained. Those who are not directly involved in the programs will look more at the effect of the program on the functioning of the participants. The results reveal that respondents who are directly involved in the programs, such as HRD officers, heads of HRD departments and HRD coordinators within HRD departments, are more positive about HRD effectiveness than are respondents who are not directly involved in programs, such as directors/works managers, line/departmental/divisional managers, heads of personnel, personnel officers and respondents from the category 'other'. This is in line with the result, found by Wognum (1999), indicating that HRD officers are more positive about the effects of HRD programs than other stakeholders. On the other hand, no significant differences were found with the group of respondents who were involved only in the program itself. This is probably due to the relatively small size of this group of respondents. A follow-up study in which more respondents from this group are involved may well produce significant differences.

Further, the form of the HRD program was examined. It was expected that in-company programs would be more effective than individual ones. The results, however, reveal that this is not the case: individual programs prove to be more effective than in-company programs. This corresponds with the results found by Wognum (2001a). The differences in the All-score are - although close to significance - not significant. It would therefore be advisable to carry out this study using a random sample with a higher percentage of individual programs. In the study presented here six times as many in-company programs were involved as individual programs.

Finally, the field to which the programs relate was examined; here there was expected to be a difference in All-score between the different fields, mainly because of the differences in the knowledge and skills to be acquired. The results reveal that there are indeed differences. Programs in the field of languages appear to be perceived as more effective than programs in the fields of management, communication, commerce, employee participation,

management and communication and programs from the residual category 'other'. This is probably due to the fact that the content of language programs is more concrete and more directly applicable than those of the other types of programs. One striking result is that both communication programs and commerce programs were found to be less effective than language programs, but that this was not the case in a combination of these programs. A possible explanation for this is that in this study there were fewer programs in the field of the combination of communication and commerce than programs in the individual fields.

The results of this study provided us with some more insights into characteristics that are able to enhance HRD effectiveness. Based on this, it is now possible to further fill out the HRD effectiveness model as depicted in earlier papers (Wognum, 2001b) with the predictor variables found.

In this study, T-tests and One-way ANOVAs were applied to assess the effect of the individual explaining variables separately. As a result, it is possible to draw conclusions as to whether or not they influence the AII-scores. However, all these variables are treated as if they were independent, and no second-order effects were taken into account. In our study this might not be the case, so further research is needed. In general, when a design consists of more than two dependent variables, a MANOVA study is conducted to gain more insight into the relations between the variables and the AII-score. Conducting a MANOVA will therefore be the next step in our research project.

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