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SUMMARY

AGING, THE ABILITY TO PERFORM AND LONGER CAREERS

For the next decades, we have to prepare ourselves for an ongoing increase of the ageing work force. In the past 25 years, the median age of the American and European workforces moved up from 35 to 40 years. The group 40 to 44 years is by now the standard age group; in 1990 it was the group aged 30-34 years, in 1980 the group aged 20-24 years. The influx of the younger diminishes. The participation of the elderly grows; the moment of retirement is postponed, and a rise of the pensionable age seems inevitable.

The increase of the aging work force raises some important questions, as we describe in the first chapter. Compared to younger workers, the performance of older workers is believed to be lower; the relation between income and productivity of older workers would lack proportion, they are described as less proficient in acquiring new technologies, their sickness absence is assumed to be higher, and their willingness to adapt to changes lower. Also, their motivation to participate in training and development is believed to be lower.

We are not yet able to fully assess the merits of these beliefs. From many different streams of research we know now that stereotyping (i.e. the formation of judgements about individuals based on preconceptions about the groups to which they belong) is a predominant component of social perception and appraisal; just like sex and race, age is a leading stereotypical category. One can imagine that the negative views about the performance of older workers we mentioned, are a result of these stereotypes. On the other hand, when we assume beforehand that less flattering views or even less positive results of scientific research about older workers should be ascribed to age stereotyping, we seriously complicate research and debate. Solving this dilemma of knowledge without a solid foundation against the pitfall of stereotyping requires sophisticated methods of research.

As careers become longer, the likelihood of changes one has to deal with increases – the more since it is generally assumed that the rate and the significance of changes in our times will keep growing. Tasks, organizational structures, technologies, markets, ways of communicating and cooperation are changing.

Workers who are not playing along with these changes face the risk of economic obsolescence: their skills can be sufficient, but the value of their skills diminishes.

Longer careers imply also a greater likelihood of changes in qualities, attitudes and behaviors of workers. Generally speaking, 60-year olds are less ambitious in pushing their boundaries than 25-year olds, have less the inclination to face risks, and are less willing to investigate the new and unknown. The distance to the initial education increases with the passage of time; knowledge may subside or become obsolete during the career. On the other hand, there are findings that indicate an increasing sense of responsibility as workers grow older – and this might give the older workers a surplus value in respect to the younger.

The questions raised by the topic of an continuing increase of the ageing work force can be bundled: How can older workers preserve or strengthen their value in the light of this changeability of tasks, of processes, and of their own orientations on work and life? Stated differently, *how will workers, at an older age and in a longer career, remain of current and material value in stable or changing circumstances?*

In chapter 2 we discuss some existing approaches and scientific findings about aging, the second half of the career, and the ability to perform. In this regard, the current research into obsolescence and into Human Resources Development is considered to be important. The main subject of both movements is prerequisites for adaptation to new developments. The classical model of obsolescence and employability forms here – more or less explicit – a guiding point of reference: social, organizational and technological changes induce a mismatch between job requirements and the skills of the incumbent; obsolescence can be counteracted by the development of human capital, thus by enriching work experiences and by formal and informal training and development. Shortening of job tenure, internal and external mobility and investments in education – even in later stages of the career – form the main themes in these lines of thought.

The main subjects of the research into obsolescence are the loss of value (regardless of functioning; so called economic obsolescence) and the loss of functioning (regardless of value; technical obsolescence). Until now, relations between obsolescence and age are not fully clarified. Age seems to be a precondition for technical obsolescence (wear and atrophy). Attempts to explain the forming of and

recovery from economic obsolescence by developments in human capital were not yet really successful.

The literature on Human Resources Development often relates job and organizational tenure with risks of diminished possibilities of gaining or retaining a job. Experience concentration points to a process of decreasing variety and increasing quantity of experiences that is fairly common during the career: a decreasing variety in tasks, situations and networks, and a diminished participation in educational and training activities threaten employability. Related to this approach is the research on *employability*. This concept, that is variegated in its definitions and measurements, refers particularly to the abilities to find and to maintain a job in internal or external labour markets; therefore adaptation behaviours, such as functional mobility, training and development, participation in networks, are emphasized.

In the research described here, we put our mind rather to the “here and now” than to the “there and then”. In the real world research we can only evaluate the effectiveness of adaptation behaviours in retrospect; we do not know which new realities workers have to face, and we do not know to what extent specific new realities require different adaptations. Moreover, the ability to produce “there and then” adds nothing to the actual production. We therefore assume that remaining of current and material value implies the *ability the put up a performance that is relevant in the “here and now”*.

The relations between temporal variables (such as age and tenure) and other predictors of level of performance, and the fluctuations in the validities of other predictors of performance, are subjects of the field of research of “dynamic performance”. The level of performance may vary with age and experience. Performance in a job or a role requires a training period, and thus experience and change of age. One needs practice (resulting in some routines) to be able to develop oneself from a novice into an expert. At different moments in age or career, different variables can be the decisive predictors of performance (e.g., in the first year of the academic study of medicine, performance is mainly predicted by intelligence, from the third semester on performance improvement is predominantly predicted by conscientiousness). A very important finding of this field of research is that relations between age, experience and performance seem to vary with individual differences between workers.

Routinization and a decrease of the variety of experiences can be very alike. Routinization in thinking and doing adds to the efficiency of human acting, at least as long as the stimuli do not change. Thanks to routines, more attention is available. A new task situation, however, can demand an other response; this new situation requires not only learning of new skills, but also recognizing the necessity of an other response, and *un*learning of existing responses. Thus, handling changing tasks and situations demands investments in learning as well as metacognitive behaviour.

We make a distinction between initial (prior to the beginning of the working career) and post-initial investments in learning. The value of initial schooling and education for society and individual is not disputed. After decades of increasingly refined research the support of many scholars for the potential value of post-initial schooling (or training and development) has diminished. We hypothesize that the negative effects of tenure, as suggested, and the hoped for positive effects of post-initial education will depend on the degree of metacognitive behaviour of the worker.

Since a central, moderating role in the classical model of employability is now assigned to metacognitive behaviour, the importance of metacognitive behaviour in keeping knowledge, understandings and attitudes relevant in the here and now, can be adstructured. Modern social and cognitive psychology made clear that people approach new information in a dual process. Unexpected, displeasing new information is usually fought with analytical instruments, whereas familiar, existing notions supporting and pleasant information is tested marginally, in an associative, intuitive way. The degree to which people themselves can influence these imperfections in reasoning is not as much dependent on their intelligence, as on their thinking styles or metacognitive behaviours. This suggests that people, as they progress in years, accumulate knowledge (declarative knowledge, notions, points of view) that is made coherent by associative, intuitive thinking. People who are habitually inclined to more metacognitive interventions, will be able to apply a repertoire of understandings, knowledge and skills that is more relevant for today's reality than those who are guided by intuition and confirmation. The accumulation of understandings and experiences can be a gold mine for those who regularly intercede their performance with metacognitive questions, and a dead weight for those who do not.

Cognitive flexibility or thinking elasticity is seen as an important part of the adaptation behaviours of people to faster or slower changing circumstances. Going along with new situations requires other efforts than executing familiar tasks. Cognitive flexibility enables recognition of the new and tuning into these realities. Thinking flexibility is in the framework of this study into the enduring, persistent ability to perform not as much important for the quality of reasoning, but for going along with changes that occur in the relevant context.

We hypothesize in this study that cognitive flexibility is fostered by a type of motivation that is oriented towards understanding and towards improving oneself (“mastery approach goal orientation”), by network diversity, by stimulation of the superior to think with him in the things he is elaborating, by initial schooling, and by personal views about the nature and the possible depth of knowledge (“personal epistemologies”). Furthermore, we hypothesize that cognitive flexibility is negatively affected by network density, by resistance to change, and by anxiousness of having been overtaken by events and the worry not to learn enough from work (“mastery avoidance goal orientation”). For an overview of the hypotheses and the research model, the reader is referred to § 2.8.

The design and procedures of this research are described in chapter 3. Aiming to prevent undesired outcomes of common method variance, we made a distinction between the sources of the data relating to the criteria (i.e. measures of performance and competences, obtained from managers and employees) and of the data for the predictors (obtained from the employees). To be able to examine possible “changing validities” during the career, the questionnaires were administered to employees in all phases of the career. With causal analyses and possible non random trends in the sample over time in mind, the employees and managers in the sample were approached for relevant data one year after the original survey. The sample consisted of approximately 650 employees, representing most kinds of jobs, and their 165 managers in a big, Netherlands based multinational banking and insurance company. Readers interested in the measures that have been used in this research, are referred to § 3.2. ff.

Knowing that appraisals by managers can be subject to influences that diminish rater accuracy, and that more employees are rated by the same manager, we investigated systematic differences between managers in leniency and in interac-

tions between characteristics of the employee and features of the manager. Through multilevel analysis (also known as *Random Coefficient Modeling* or *Hierarchical Linear Modeling*) we were able to unfold the measures of performance and competences in several components. This decomposition of data revealed that differences in leniency between managers are substantial (but smaller than usually described in the literature); the interactions between raters and ratees (or *halos*) seem to be of greater importance than usual, especially with respect to thinking along with the manager, and annoyance (manager ratings). As a consequence, all analyses involving manager ratings have to be carried out in multilevel analysis; in the other analysis, the OLS-model will suffice.

The implication of the analyses of the data of this sample, described in chapter 4, is that part of the hypotheses can be accepted. However, this research resulted also in several surprising findings that may invite us to reassess existing notions.

We found, as hypothesized, a strong relation between age and different forms of tenure. For many employees, the acceptance of an appointment soon after vocational training marks the beginning of a career long commitment; nevertheless, there is also an intake of older employees (until about 50 years).

One of the most essential and remarkable findings of the analyses is that the concept of tenure turned out to have considerably less weight than is often assumed. Tenure hardly contributes to the predictions of the ability to perform; in most analyses in which tenure was to estimate the ability to perform, it appeared to be a spurious predictor. When age was added to the equation, almost all relations between tenure and the ability to perform disappeared. The concept of tenure thus has gained an overrated position in our thinking about performance and competences.

The associations between age and the ability to perform have, as a whole, in the manager ratings in this sample a negative sign. As employees are older (especially from about 35 years onwards), the ratings become systematically less positive. In secondary analyses we were able to determine that this negative tendency cannot be ascribed to age stereotyping. Age stereotyping implies an interaction between characteristics of the manager and properties of the employee, and thus a variation between managers in the associations between age and

ratings of performance and competences. This variation turned out to be negligible.

In the self ratings we also found negative associations between age and the ability to perform. Older employees feel less able to cope with the burden of work than younger ones. As they grow older, they experience a deterioration of their level of competences and in the quality of their performance in the year between the first and the second moment of data gathering. On the other hand, as employees grow older, they attribute to themselves more corporate sense or citizenship – a view not shared by their managers. To put it briefly, the manager ratings as well as the self ratings indicate a systematic decrease of performance and competences from about 35 year onwards.

Another significant result concerns the importance of cognitive flexibility in preserving and strengthening the ability to perform. Employees who choose metacognitive positions in their daily work are rated systematically higher in five of the six measures of ability to perform. Cognitive flexibility plays an even more important role in self ratings of ability to perform. A considerable part of the variance of performance and competences in these ratings is dependent upon cognitive flexibility; after correction for common method variance (by relating the score on cognitive flexibility at time 1 with the self rating of performance at time 2), an important association remains: an employee who indicates to frequently choose metacognitive positions at time 1, will rate his performance a year later more positive than a colleague who reflects less on his work. We emphasize that the capability to carry the burden of work is one of the measures in the self ratings that is closely associated with cognitive flexibility: choosing metacognitive positions appears to add to the self perceived coping with strain.

In the age group 35 to 50 years, cognitive flexibility is an essential variable in the prediction of manager ratings. Especially in this age group, getting older needs to be accompanied by a reflective work attitude. The transition to the following years of the career is facilitated by cognitive flexibility.

As hypothesized, cognitive flexibility is influenced by motivational undercurrents of work behaviour (“mastery approach goal orientation” and “mastery avoidance goal orientation”), by resistance to change and by network behav-

ious. Stimulating behaviour of the manager to think with him is a direct predictor of cognitive flexibility as well; moreover, this predictor helps diminishing resistance to change. The supposed mediating effect of personal epistemologies in the relation between level of education and cognitive flexibility could not be demonstrated. The influence of mastery approach goal orientation was partially mediated, and the influence of mastery avoidance goal orientation, was fully mediated by resistance to change. The relations between cognitive flexibility, resistance to change and mastery approach goal orientation were found to be very strong; one can imagine that these three variables in a pattern that may differ from our conceptual model, are decisive in preserving the ability to perform.

In this sample, facilities for training and development were abundantly used. Half of the sample spent, irrespective of age, the previous three years up to 20 days on training and development. The other half attended up to 150 days; in the latter half, the usual age dependent decrease of training participation could be demonstrated. These results suggest that at least half of this sample attempted to qualify for higher demands; these efforts can be directed towards career advancement as well as combating obsolescence due to higher demands in the current job.

Training and development appear not to be very effective remedies against loss of ability to perform. The potential appraisals (at time 1 and at time 2) are related to the number of days training and development in the previous three years, but it was not possible to identify the direction of this relation. The age group with the greatest efforts in training and development, the younger employees (20-35 years), does not see any yield of it in the ratings by their managers. The central age group (35-50 year), of all employees, appears to benefit most of training and development, but this impact also has to be qualified as rather poor. In the self ratings the results of efforts in training and development are only slightly more important.

The application of newly gained knowledge, insights and attitudes is, as the self ratings show, in a small but significant proportion facilitated by cognitive flexibility; this effect is demonstrated in the youngest and the oldest age group. In the manager ratings these interactions between cognitive flexibility and training and development are negligible. Overall, these analyses demonstrate, in line

with the state of research in the social sciences, that the effect of training and development in preserving and strengthening the ability to perform, should be qualified as limited. Cognitive flexibility and – until now unknown – other age-related variables play the leading part in these analyses.

Training and development, however, contribute evidently to the level of salary (protected against relapse), and thus appear to be predictors of *historical* ability to perform or employability. Overrating the own competences and motivation occurs mostly in older employees with a lower educational level who advanced their career by means of training and development.

In this research, we turned attention to possible effects of sample selection bias. Knowing that a part of the sample did not participate at time 2 for reasons that are not coincidental (leaving the force for promotion or other identified reasons), will deletion of these participants from the sample at time 1 change the findings? The performance rating by the manager appeared to be the strongest predictor of the reason to leave: the higher this rating, the bigger the chance of leave due to promotion, the lower this rating, the bigger the chance of leave for other reasons. Presumably the “mediocres” remain; the evolution of the sample in one year affected simultaneously the left side and the right side of the distribution of performance ratings. Thus, one might expect a sample selection bias. However, the findings barely changed after deletion of the non participants at time 2 from the sample at time 1. The proportion of leavers whose performance rating were available, was presumably too small. The subject of sample selection bias nevertheless did not loose importance as a result of this finding.

In chapter 6 we first discuss some theoretical implications of the results. The small weight of the variable tenure can be explained by differences between the designs of earlier research and this investigation on the one side, and by the very rough, quantitative nature of the concept on the other side. We suggest the possibility that experience consists of *both* passively going through *and* actively participate in (series of) situations, and that this going through and participating deposits in cognitions as a result of conscious and unconscious processing of (series of) situations. Stated differently, we define experience as the sediment of interactions between person and situation or between person and task. With regard to the concept of tenure, this definition means that it is not so much about

the length of the series of events or activities, but about the things people do with this series of events or activities, or how they are influenced by them.

The negative relations between age and ability to perform – especially from about 35 year onwards – that were found in this study, are clearly significant, are in line with the most recent meta-analyses, and are stronger than often reported. These findings cannot be ascribed to age stereotyping. We therefore assume that around these years something has *to be done* in order to preserve the ability to perform in the long run. As one approaches the age of fifty, cognitive flexibility becomes more important. In this phase of the career, daily work requires more metacognitive activity. The finding that cognitive flexibility plays a moderating role between temporal variables and ability to perform especially in the central age group (35-50 years), implies that these years in the career can be of critical importance. Presumably, the mental baggage of education and experience that is formed in earlier years, is extinct; perhaps this baggage now influences the performance in a negative way.

Although the process of getting “set” was not a main theme of this study, the analyses revealed some germane findings. It appears that employees, if ever, do not get “set” in their job or workplace, but in their thinking or cognitions. As soon as the volition to understand and to learn about the “here and now” (mastery approach goal orientation) decreases, employees face the risk of falling behind. This decrease is related to age, but not to tenure. The switchover to a new job or role can be demanding, and these demands are dependent on the tenure in the former job or role; however, this is the case *independent* of the time one has worked in the new job. Whether or not the switchover to a new job is risky, not only seems to be dependent on the tenure in the former role, but also on the personal qualities of the employee, among which cognitive flexibility and the personal fit to the new role.

The finding of a limited contribution of training and development to preservation and strengthening to the ability to perform concurs with the grown scepticism in the social sciences about the benefits this type of education. We therefore assume that an increase of knowledge and competences at a later age remains possible, but that the application of new knowledge and competences is hindered because the *capacity to gain insight and to handle greater complexity* (the so

called *fluid intelligence* or *Gf*) is confined to an earlier moment in life (around the 25th year of life).

Given the frequent incidence – as presumed – of age stereotyping, some might find it astonishing that the negative tendencies in the rating of older employees in this study cannot be ascribed to age stereotyping. However, we also know that in field studies such as this, the effects of stereotyping are generally weaker than in experimental studies, and in ratings of real co-workers weaker than in the selection and hiring of new colleagues. Considering the fact that four out of six manager ratings were real appraisals for which the managers will be held accountable, one might wonder whether these ratings are a bit rosy.

The findings of this study can be generalized – as we assume on the basis of comparisons of jobs and industries – to one quarter of the (Dutch) working population. With some prudence, one may find these results applicable to another quarter of the work force, thus covering the greatest part of the white collar working population.

The results of this study question the tenability of HR-policies based on the classical model of obsolescence and employability. Broadening experience and training and development may be beneficial, but the contribution of these efforts to the ability to perform depends on the ways the employee processes these experiences and knowledge. General policies aimed at the strengthening of human capital do not result in, as this study demonstrates, the intended general effects. Forcing shorter job tenures does not preserve or strengthen the ability to perform. We should not have high hopes about possibilities for upgrading employees; knowledge and skills can be developed very well, but the ability to deepen insights is limited.

The preservation and development of cognitive flexibility deserves a firm position in the policies of human resources management. We mentioned three themes of intervention: stimulate employees to think along with the manager in the problems the manager is elaborating on, adapt systems of performance management towards promoting mastery approach goal orientations, and encourage talking to employees in the danger zone of becoming set. The middle phase of the career is critical; in this phase learning the new and unlearning old and ir-

relevant knowledge and routines is decisive in the ability to perform in the later years of the career.

I/O-psychologists should develop pitstops in which employees can turn their attention towards the mental baggage they formed during the career (especially the behaviour regulating notions), and can renew this baggage if necessary. A good starting point can be found in the cognitive therapy approaches.

We sketched some outlines of a new model of obsolescence and employability: during the years one forms a mental baggage, consisting of sediments of interactions between person and situation or between person and task. Cognitive flexibility is of vital importance in keeping this baggage up to date, especially in the middle phase of the career. A mental baggage that is up to date and relevant contributes to the ability to perform.

Additional research should be directed, as we suggest, to the development of instruments that can measure the topical effectiveness of mental baggage independent of content. We conclude by giving some suggestions for a refined investigation of the nomological network of cognitive flexibility.