Aim of this thesis was to investigate whether hand-injured patients needed extra support to accelerate their return to work (RTW), and if so, what kind of treatment component would be appropriate, and to develop such an intervention and evaluate it. More specifically, the aim of this thesis was to answer the following research questions:

1. How much time do hand-injured patients in a Dutch rehabilitation setting take to RTW after their injury?
2. What factors from a biomedical, psychosocial and work-related perspective determine RTW in hand-injured patients?
3. Is the Dictionary of Occupational Titles (DOT) a valid instrument in the process of RTW in hand-injured patients?
4. How can an intervention be developed that is highly adjusted to the local practice and the target population in which it eventually will be used?
5. What are early results of the proposed intervention and is the intervention feasible in clinical practice?

These questions were answered in chapters 2 to 6. Half of the hand-injured patient needed more time to RTW than medically necessary. Factors determining RTW were of biomedical, psychosocial and work-related nature. It was concluded that a new, psychosocially oriented treatment component was required to stimulate patients in their process of RTW. A theory-informed approach was used to develop a new intervention in which patient values, clinical expertise and latest scientific insights were combined in a process of co-creation. By combining this information an intervention was developed that met the wishes and needs of patients and which was adjusted to local practice. A group intervention based on solution-focused therapy (SFT) was the result.

The novel intervention showed a decrease of 5 weeks on RTW when compared to a historical cohort. This effect seems economically and clinically significant, but was not statistically different. No changes were found on secondary outcome measures, including problem solving style, health locus of control and S-PTSD.

The Dictionary of Occupational Titles (DOT) is an instrument that categorizes all job functions based on, among others, physical work load. To investigate validity of the DOT with regard to upper extremity work demands, four hypotheses were tested. From these hypotheses it could be concluded that the DOT cannot be
validly used to determine work load for patients with hand injuries, as the physical demands categories were not related to upper extremity work demands.

The aim of this chapter is to reflect on the results presented in this thesis, to discuss limitations of the studies, and to discuss the implications of this thesis for future research and clinical practice.

Integration of the Results of this Thesis/ Strengths of the Study

In chapter 2 we summed several determinants of duration of sick leave, in a general population and in the hand-injured population. We stated that many studies found inconsistent and contradictory results, possibly coming forth from the univariate analyses. We conducted a survey study to further investigate the factors relevant for hand-injured patients. We chose to combine factors from different categories in one multivariate analysis, as RTW is a multifactorial process (1). Factors from biomedical, psychosocial and work-related nature were combined. We found factors from all three categories to influence RTW, but did not find any significant interaction effect. This could be because of the small sample size, restricting us from performing in-depth analyses. Sample size problems will be more extensively discussed under study limitations (3.1.1).

An important feature of this thesis is the combination of different research techniques. Both quantitative and qualitative studies were presented. The final product that came forth from results of these studies, the solution-focused group intervention, would not have been the same if only one of these methods would have been used. First a (quantitative) questionnaire study was performed (chapter 2 and 3) to get insight into determinants of RTW in hand-injured patients. This information was supplemented with literature study and information from clinical experts and patients. The information was gathered by performing focus group interviews with therapists and patients, and interviews with rehabilitation physicians and company doctors (chapter 5). By integrating the information gained from these various sources, a novel intervention was developed. The proposed intervention complements the regular rehabilitation treatment, by adding a more psychosocially oriented component and by specifically paying attention to RTW-problems as experienced by patients. Early results of this intervention were studied in a pilot study (chapter 6), which could be seen as both quantitative and qualitative, as we both discussed effects and
implementation issues. The knowledge gained from the various studies resulted in a valuable intervention, which justifies further effectiveness studies in larger sample sizes.

Median duration of sick leave in our survey study was 15.0 weeks (Inter Quartile Range [IQR]: 9.1 to 21.9) and in our intervention study 10.6 weeks (IQR: 7.0 to 19.4). Due to population differences and differences in measuring RTW it is difficult to compare these results to literature. In the light of biomedical treatment, results of the survey study seem to fit in: after 10 to 12 weeks patients are, in general, able to start performing light tasks again. Psychosocial problems might have caused the 5 week ‘delay’ in the survey study, while the intervention is specifically aimed at these problems and therefore these problems may play a smaller role in the intervention group. Additionally, the intervention may have stimulated and activated patients in their process of RTW, as they were reminded of their RTW in an early stage of treatment.

**Solution-Focused Therapy in RTW**

Since 2000, four reviews have been published on research on SFT (2-5). Results show moderately positive effects for SFT. Stams et al. found a stronger effect for group therapy than for individual therapy (5). The low methodological quality of the studies included remains an important critique in all reviews. Effects of SFT remain equivocal and more rigorously designed research needs to establish its effectiveness. More experimental and quasi-experimental studies are needed, while less often designs such as single-subject, single-group post-test only and single-group pre-test/post-test studies should be chosen.

Due to large implementation differences between studies, it is difficult to compare outcome results. For example, in some studies SFT is delivered in group-format, while other studies use SFT as an individual therapy. SFT is not a highly protocolized therapy, thereby complicating comparisons.

Theoretical applications of SFT to specific problems or populations are frequently described. We found some articles on the theoretical application of SFT in problems related to work and employment. Burwell and Chen described how SFT was translated into a career counselling program by connecting the key principles of SFT to the career counselling context (6), and similar steps were taken by Bezanson to apply SFT in employment counselling (7). These articles mainly focus on the application of SFT in career and employment counselling, and give examples of
questions to be asked by the counsellor. No translations are given towards a new treatment. The articles showed how easy SFT can also be used in an employment setting (6;7).

Besides theoretical applications of SFT in an employment setting, also studies investigating the effects of SFT on work and employment problems are available. Five studies have used SFT before to support patients/clients in their process of RTW or in career counselling (8-12). Knekt et al. found that SFT and short-term psychodynamic psychotherapy gave benefits more quickly than long-term psychodynamic psychotherapy on work ability in patients with anxiety and depressive disorders, but in the long run long-term psychodynamic psychotherapy appeared more effective (12). The other four studies compared SFT to treatment as usual. Nystuen and Hagen investigated the effects of SFT on sick leave and rate of RTW in sick-listed employees with psychological problems or musculoskeletal pain (10;11). Both studies were underpowered, and a very low uptake of the intervention was reported: only 13 participants out of 122 participated in the voluntary therapy sessions. No difference was found in either of the studies on the work outcomes, but in the study of Nystuen et al. (2006) patients did significantly improve on mental health in the SFT-group (11). Thorslund studied effects of solution-focused group therapy in patients on long-term sick leave (9). Patients participated eight times in 3-hour sessions. A significant positive effect was found for the SFT-group in both RTW-rate and psychological health, even though groups were small (treatment: n=15; control: n=15). The population studied by Cockburn et al. appears to have the most similarities with our hand-injured study population: patients from orthopaedic rehabilitation participated in a work-hardening program (8). A Solomon 4-group design was used to test whether SFT, in conjunction with work hardening, resulted in a higher RTW-rate. It was found that more patients in the treatment groups resumed work within 7 days after discharge than in the control groups, who more often returned to work after 30 days. Treatment consisted of 1 session per week for 6 consecutive weeks.

These last two studies (8;9), of which populations show largest overlap with our target population, both found highly positive results for SFT, in small groups. It seems that SFT can be effective for supporting patients in their process of RTW, especially when injuries are predominantly physical of nature at first sight. These results support our findings. Even though these studies, including our study, all have methodological restrictions, such as limited sample size, results all point in the same direction: SFT can be effectively used to stimulate patients in their process of RTW.
Common Factors & Active Ingredients of Therapy

Psychotherapy is frequently embedded in the medical model, and therefore is investigated with designs that fit within this medical model. The medical model assumes that there are specific ingredients in treatments, responsible for differences between treatments, named specificity (13). This specificity can be measured in several ways. Mostly used are component designs that determine effectiveness of the different components of therapy, divided in dismantling and additive designs (13). Another method to investigate specificity is to examine interactions between treatments and specific client deficits. Specificity predicts that the more a therapist delivers the purportedly important specific ingredients, the better the outcomes are. A last method to examine specificity is to examine the psychological change processes that should be present if the specific ingredients are efficacious (14). This final method was used in this thesis (chapter 6), by investigating effects of the novel intervention on symptoms of PTSD, problem orientation and health locus of control over time. However, we could not detect any significant differences between the pre-test, and the two post-test measurements. In the discussion of chapter 6 we already mentioned common factors as a possible explanation for the effect of the intervention, even though no differences were found on the secondary outcome measures. The common factor approach assumes all psychotherapies to be equally effective, also known as the ‘Dodo Bird Verdict’, due to the similarities between psychotherapies (15). Common factors play an important role in the contextual model, next to context factors (16). In the contextual model the therapeutic relationship is the key component, which has frequently been found to be a strong predictor of outcome (17-19). The degree to which therapists show allegiance to a treatment is also an important component of the contextual model, next to the role of the therapist himself. This emphasis of the contextual model on common factors, does not exclude the use of specific techniques (20). However, a deliberate decision should be made by the therapist on what therapeutic techniques fit best to the individual client with his problems. This gives the client a leading role during therapy. The medical model, on the contrary, suggests that the client is a passive being on whom the therapist operates. This does not go well in hand with SFT, in which the client is regarded as the expert and determines what happens during therapy (21). SFT in general seems to better fit in with the contextual model, as SFT puts high emphasis on the relation between therapist and client, and offers the therapist helpful techniques to enhance this relationship (18). Even the type of relationship...
between therapist and client influences what the therapist may do during a session (22). The Session Rating Scale (SRS) was used to measure client satisfaction after each session. The SRS is designed to monitor the therapeutic relationship, and to determine whether the right techniques are used and relevant topics were discussed (23). As soon as SRS-outcome is below a certain threshold, the therapist asks the client(s) what he should do better, to improve the therapy. In this manner, the therapist constantly checks with the client whether they are still working in the right direction, purely based on common factors. No comparisons with the historical cohort group were made on the SRS, as the patients participating in that study (chapter 2 and 3) did not receive any additional treatment. However, SRS scores in the pilot cohort indicated that patients were satisfied with the sessions, and thereby supported the idea that common factors may play a significant role in the novel intervention.

Dictionary of Occupational Titles

The Dictionary of Occupational Titles (DOT) is used in vocational rehabilitation to guide decisions about the ability of a person with activity limitations to perform activities at work (24). In chapter 4 validity of the DOT was investigated with regard to upper extremity work demands. Our findings demonstrate that the physical demands classification system of the DOT is not valid for assessing upper extremity work demands, and thus, can not be used validly to advice patients with hand-injuries or other complaints of the upper extremities on work ability. We did not find any other studies that tested validity of the DOT within other specific diagnostic groups, so the methods used in chapter 4 are largely based on common sense and promises made by the DOT. For instance, the DOT claims the five categories to be mutually exclusive. This logically leaded to testing whether overlap occurred between occupations from different categories. Additionally, the DOT claims that work demands within a category are equal, leading to the test for statistical differences in upper extremity demands within a category.

To validly advice hand-injured patients about their professional opportunities, it is important to determine both work capacity and expected work load of jobs under consideration. Work capacity of hand-injured patients can be measured by specific tests of Functional Capacity Evaluations (FCE) (25), and work demands can be measured by performing workplace assessments. However, when only advising patients about job possibilities, it is not possible to carry out workplace assessments for every.
job under consideration. Besides this, both FCE’s and workplace assessments are expensive and time consuming. The underlying idea of the DOT appears to be good, but the actual instrument is of less help for patients with hand injuries, and probably also for other diagnostic groups, as the right information is lacking.

Limitations

Limitations of Research Methods in this Thesis

Sample Size Problems
A constantly returning limitation through almost all chapters (except chapter 5) is the limited sample size, withholding us from making firm statements and conclusions. It appears in literature that more researchers have to face this problem (11;26;27). We might all be overestimating our target population. Frequently, an estimation of eligible patients is made based on the number of patients annually treated in the hospital. But we tend to exclude many patients based on strict criteria, and the patients who remain eligible not all want to participate. Numerous articles have been published that present guidelines for determining sample size (28-31). It seems, however, that these articles are written from a statistical point of view, and are missing a reality check. So we can determine how many patients are needed to find a statistically significant difference between groups, but it remains difficult to also determine how many patients actually want and can participate in a trial. Several methods are proposed to determine clinical significance (32-34), but to date no gold-standard is yet available that tells us which option is best.

Our main question at this time is: why do we keep making the same mistakes with respect to sample size? We calculate sample size based on estimation of effect sizes (in studies of novel interventions) and effect sizes of previous studies, and determine how much time would be needed to include this number of patients. But somehow, numerous problems are experienced when trying to reach the desired sample size in the predetermined time, and often researchers do not succeed (26;27). A possible explanation could be the difference between inclusion criteria between the study on which sample size was based and inclusion criteria of the intended study. For example, sample size calculations for the study described in chapter 6 were based on information from chapter 2. However, inclusion criteria that were set in chapter 2 differed from criteria set in chapter 6. Patients could participate in the survey study (chapter 2)
if they had a hand injury or hand disorder. In the study presented in chapter 6 the hand injury had to be of acute origin, a certain time set was given (patients had to be included within 3 weeks after trauma, later adjusted to 6 weeks post-trauma) and patients had to be on sick leave at the time of inclusion. This resulted in a smaller target population than in chapter 2. Besides this, less patients were willing to participate, as participating in the intervention study was more time-consuming and interfering with other daily life activities than participating in a survey study. These differences between studies should be kept in mind when determining the expected duration of the study based on the sample size.

**Effect Size**

A frequently experienced problem in calculating sample size is the necessity to estimate an effect size. There are many choices to be made for estimating effect size that influence the final sample size calculation. Maxwell et al. presented a table based on an equation with required sample sizes based on the number of predictors included in a regression analysis, for researchers who do not have any expectations on effect size, and assume zero-order correlations. According to a rule-of-thumb, at least 10 to 15 participants should be included per factor in analyses (31). However, several rules of thumb exist, that frequently differ from one another. As can be seen in Table I, the sample sizes suggested by Maxwell et al. differ largely from the rule of thumb that the ratio between predictors and participants should be 1:10, which is more arbitrary. However, this table is basically a new rule of thumb, as most specifics of studies are not included in the equation, but only the number of predictors.

<table>
<thead>
<tr>
<th>No. of predictors</th>
<th>Sample size</th>
</tr>
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<tbody>
<tr>
<td>2</td>
<td>141</td>
</tr>
<tr>
<td>3</td>
<td>218</td>
</tr>
<tr>
<td>4</td>
<td>311</td>
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<td>5</td>
<td>419</td>
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<td>6</td>
<td>543</td>
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<td>682</td>
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<td>8</td>
<td>838</td>
</tr>
<tr>
<td>9</td>
<td>1009</td>
</tr>
<tr>
<td>10</td>
<td>1196</td>
</tr>
</tbody>
</table>

Table I: Necessary sample size for power to equal .80 as a function of number of predictors when all zero-order correlations are medium. Adapted from Maxwell et al. (31)

**Decisions on Design, Sample Size and Predictors**

Design of the study should also be considered when calculating required sample sizes (29). Sample size, in the end, must be a compromise between the competing demands of good science and available resources of time and budget (29). Unfortunately, exactly these last factors largely influenced samples size in the studies described in
chapter 2, 3 and 6: time-constraints lead to the premature termination of inclusion periods. This was especially true in chapter 6, in which it was planned to include 100 patients. However, this number of patients was not eligible in the participating centers in the pre-set time period. For this reason, we restricted ourselves in the amount of predictors/secondary outcomes used in the studies. Originally, more secondary outcome measures were included in the survey and pilot study, but due to the small sample size, only those that were expected to have highest influence, could be assessed. It could have been that changes occurred on the other, excluded, outcome measures. Another restriction of our study due to this small sample size is that we had to step back to a cohort study, while initially a RCT-study was planned. Comparisons would have been more reliable, and with increased sample size, a large chance exists that the difference in time to RTW would have been statistically significant.

Comparisons of Cohort Studies

Due to aforementioned sample size problems, it was not possible to conduct an RCT study to evaluate effectiveness of the novel intervention. For this reason we chose to compare results from the intervention study conducted between November 2008 and April 2010 with results of the survey study carried out between April 2006 and March 2007 (chapter 6). This type of comparisons, conducted in a widespread period, should always be made with caution, as greater differences between the groups at baseline can be expected. These differences can arise from a different societal setting. For instance, during the intervention study, a financial crisis was at its highest level, making workers afraid of losing one's job. This could have stimulated our intervention cohort to RTW as fast as possible, while during the survey study, the risk of losing one's job was lower, possibly allowing patients more time to recover.

Another risk of comparing two cohorts from different time periods is change in care as usual. Evidence-based medicine is a highly scientific field with constant improvements in treatment protocols, both in surgical treatment as in rehabilitation treatment. Therefore, it is important to track changes in the treatment protocol of the local practice under study. During the period that the studies presented in this thesis were conducted, no major changes were made in the treatment protocols as used by the rehabilitation centers.
Use of Questionnaires

In four of the five studies presented we used questionnaires as measurement instruments. In rehabilitation research and in psychology it is very common to use these as outcome measures, as the constructs to be assessed often can not be measured in other fashions as, for instance, grip strength can be measured with use of a hand dynamometer. Questionnaires, however, always bring uncertainties. It can be difficult to select the most appropriate questionnaire: researchers have to be precise in what construct they want to measure, or on what construct changes can be expected due to an intervention. Additionally, not always the required language version is available or information on psychometric properties may be missing. And even if all these problems have been surpassed, norm values may be lacking or only available of very homogeneous groups, for instance first year psychology students, making it difficult to compare results of the population under study with the population in general and to interpret results.

Unfortunately, no better measurement tools are yet available for performing quantitative studies; for now we have to stick to the questionnaires. So how can we improve questionnaire studies? Probably the answer would lie in the range of ‘taking more time for research projects, so translations can be made, psychometric properties can be studied and norm scores can be obtained’. However, this is mostly not feasible, due to both time and financial constraints. The option we chose in our studies was to provide insight in the psychometric properties of the questionnaires used, so that readers can form their own opinion about our questionnaire-use. In our studies, it might have been interesting to include a self-efficacy questionnaire. However, only general questionnaires could be found, while we were more interested in specific self-efficacy with regard to RTW after an injury. The same might hold for problem orientation, as measured in the pilot study. The SPSI questionnaire with the problem orientation scales may have been too general for our study, and thereby not sensitive enough to measure the changes that could have occurred. Maybe qualitative designs may be more suitable for such specific outcomes, as patients than can be personally asked bout issues during an interview. Ambiguities can immediately be clarified by asking additional questions. This, however, is often difficult when sample sizes are large. Looking back, knowing that our sample size remained small, it would have been better in our study to conduct several interviews with each patient.
Limitations of the Concept RTW

We measured RTW as the moment a patient resumed work for at least 12 hours per week. Especially in the solution-focused intervention study this seems justified. SFT assumes that a little change leads to larger changes. As soon as a patient has returned to work, no matter for how many hours or whether it is on therapeutic base or not, the first step has been taken, and this positive alteration will very likely continue itself.

We measured RTW with help of a return-form. This, however, seems not an optimal instrument to measure RTW, as patients often forget about returning it, especially if a long time precedes RTW. During the studies presented, patients were frequently called to check whether they already resumed their work. Unfortunately, this changed the return-form and the phone calls, although it was designed differently, into a retrospective instrument possibly causing recall bias. Therefore, RTW results were, in some patients, estimations instead of exact data.

Dasinger et al. (35) found a large difference between self-report measures and administrative measures of sick leave. Administrative measures in this study were based on number of compensated days. It is hypothesized that the administrative measure actually underestimates time off work, since workers may return to work while on permanent disability, albeit possibly on a lower wage rate (35). Patients could also have returned to work on a therapeutic basis, and therefore still collect disability benefits. As there is no “gold-standard” with respect to RTW-data, it may be best to retrieve RTW-data by collecting data from both patient and employer, and prevent retrospective data-gathering. Every study should define what is understood by RTW, as this is depending on the research questions to be answered. For example, in a cost-effectiveness study compensated days will be of main interest, while in a study on quality of life the actual number of days that the patient could not work might be a more appropriate measure of RTW.

Limitations of the Proposed Intervention

In chapter 5 we described the novel intervention in high detail. Besides giving a description of specific exercises and intensity, duration and frequency, we also tried to explain the rationale behind the intervention. However, the description given in chapter 5 is still only a guideline for other treatment centers who want to support patients in their RTW process. Translations will be needed to adjust it to specific needs.
and wishes of the target population and the clinical setting in which it is implemented, especially when implementing the intervention in a very distinct setting from the one presented in this thesis, for instance due to cultural or societal differences. A handbook in which examples of different translations are presented might be helpful for clinicians to determine the optimal way of implementing the intervention in their local practice.

A problem faced during the pilot study presented in chapter 6, was the difficulty to fill groups up to adequate size. Often only two or three patients attended the sessions, while the intervention was originally designed for 5 or 6 patients per session. Even in a large academic hospital as the University Medical Center Groningen in The Netherlands, not enough patients participated in the study to fill these groups. This could influence group processes and cost-effectiveness of the intervention. To tackle the problem of small groups, it is suggested to investigate whether the target population can be extended with patients with other types of traumas. We suggest only including patients with acute traumas, as chronic disorders in general have different (psychosocial and physical) consequences than traumatic injuries, and therefore may require a different approach.

Solution-focused therapy (SFT) appears easy, as not much knowledge about the problem is required from the therapist. Indeed, knowledge about hand injuries is no prerequisite for being able to give the therapy sessions. But even though it appears fairly easy, it is difficult, especially for experienced psychologists from another therapy movement, to adopt the stance of not knowing and to fully let the patient decide how the therapy session proceeds as therapists mostly learned differently. Additionally, it is fairly difficult to imply positivity and changeability in each question posed and not to concentrate too much on the problem, but on the other hand not to over jump the problem either. This is something to be learned and practiced a lot before succeeding in SFT. To capture this problem, an experienced solution-focused psychologist should be in charge of the sessions.

**Future Research**

*Determinants of RTW*

In chapter 2 we investigated determinants of RTW. Unfortunately, due to sample size issues, not enough patients could be included in the study to justify hard conclusions. It would be very interesting to study determinants of RTW prospectively in large study
samples, thereby also creating a possibility to investigate further interaction effects and to identify risk factors.

So far, systematic reviews revealed many inconsistencies in determinants of RTW. To decide which factors should be included in future studies, it is recommended to investigate factors which are earlier found to influence RTW, and these uncertain factors as well. Additionally, other research areas should be checked for new ideas on RTW, for instance factors defined in law studies or economic studies. Focus group interviews with different stakeholders (patients, clinicians, employers) might also bring forth some new ideas about factors to investigate. Furthermore, we should strive to conduct large (international) multicenter trials, thereby reaching sufficient sample sizes and to diminish the influence of local effects on outcome.

_Efficacy, Effectiveness and Efficiency of Novel Interventions_

When discussing benefits of treatment, it may be useful to investigate efficacy, efficiency and effectiveness. Efficacy is the ability of a treatment to produce benefit if applied under ideal circumstances, for instance during RCT-trials. Effectiveness is the benefit that actually occurs when a treatment is used in practice. Effectiveness studies investigate how many people responded to treatment, whereas efficacy studies investigate how many of the people who met the inclusion criteria and agreed to be treated responded to the experimental treatment. Efficiency describes the resources required to produce a unit of health gain, and is often studied in cost-effectiveness studies (36).

In this thesis, an early attempt was made to gain information on efficacy and effectiveness. We have not studied the novel intervention in a highly-controlled RCT-setting, but immediately implemented the intervention in regular treatment practice. However, we did try to control some variables. For instance, patients had to meet inclusion criteria and treatment was given by the researcher instead of a local psychologist, thereby increasing treatment integrity. In chapter 6, it appeared that the intervention was clinically effective, although still not statistically proven. Nevertheless, we could not determine whether the difference between the groups was an effect of the intervention or not. But even without this statistical evidence, it can be concluded that hand-injured patients may benefit from the proposed intervention, and further larger studies seem justified.
Cost-Effectiveness Studies

When efficacy and efficiency of the intervention are determined, it is interesting to perform a cost-effectiveness study. Factors such as average costs per day of treatment and daily costs of usual care, medication costs, costs of productivity losses, costs of loss of free time and professional domestic aid and travel costs should be included in the analysis. Costs per treatment can be calculated with time investments of the psychologist responsible for the sessions. Meijer et al. (37) proposed a formula to calculate cost-effectiveness of multidisciplinary treatment, in which outcome of effectiveness, with regard to RTW, was defined as one extra half-day RTW. The definition of cost-effectiveness was as follows (37):

Cost-effectiveness of the intervention (I) as compared to usual care (U) at any time t was defined as the difference in total costs (TC) associated with the complaints following the start of treatment until time t between the intervention and usual care, divided by the difference in extra units of outcome (OC) in the same period between I and U:

\[
CE(t) = \frac{(TC_I(t) - TC_U(t))}{(OC_I(t) - OC_U(t))}
\]

By performing such a cost-effectiveness analysis, it can be decided whether the novel intervention, if it appears effective, is suitable for further implementation and uptake in the regular healthcare system. Cost-effectiveness of the proposed intervention was not studied in this thesis. We did, however, make some suggestions about economic relevance of the intervention. Patients spend around 7 hours on the intervention, of which 6 hours were in group format. So, per patient maybe 2 or 3 hours were spent by the therapist. Time off work was reduced by 5 weeks. At first sight, this appears to be cost-effective, but a cost-effectiveness study should be conducted to gain certainty.

Studies in a Clinical Setting

As mentioned before, effectiveness studies are performed in a clinical setting, to investigate how the intervention ‘behaves’ in practice. It would be interesting to investigate as well how the intervention changes the clinical setting. It is mostly desirable to keep the clinical setting unchanged, especially when studying a treatment and a control group. But in most cases it is close to impossible to completely blind
Return to Work after Hand Injury

clinicians for the intervention. Therefore, we believe it might be more feasible to first investigate effect of treatment as usual, and after that implement the novel intervention and investigate its effectiveness. After ending the study period, it is interesting to see whether treatment as usual changed as a result of the intervention period. For instance, it could be that clinicians in our study setting started to pay more attention to RTW as well, deliberately because RTW became an actual subject in the treatment center, or unintentionally because patients start talking about RTW more often by themselves.

Investigating Common Factors

Investigating the effects of common factors in psychotherapy is complicated when making comparisons between a treatment group and a group that receives regular treatment. Earlier, we mentioned the SRS as an instrument to measure the therapeutic relationship, and satisfaction with therapy sessions in general. But this instrument implies the presence of an intervention. Therefore, we could not make any comparisons between the two groups described in chapter 6. It would be interesting, in future studies, to compare two groups receiving the same psychotherapy. One of the groups receives the therapy in a very strict fashion, and in the other extra attention is given to the common factors, for instance by using some of the SFT techniques. SRS outcomes of the groups should be compared to define whether the difference in effectiveness, if present, explains the variance.

Improvements of the Intervention

Although promising results were already found, the proposed intervention could probably still be improved. In its current shape, it focuses solely on the patient perspective. Due to practical implications, no connection was made with the workplace. In ideal circumstances, the employer and colleagues might also get involved in the RTW process of the hand-injured patient, as the employer is legally obliged to put maximum effort in the patient’s process of RTW. Sometimes patients experience difficulties in explaining physical and psychosocial restrictions to colleagues. This could be captured by accompanying the patient to a meeting with employer/colleagues, so the therapist can support the patient when he is explaining his situation, or the ‘presentation’ of the patient can be practised beforehand. At all times the patient should stay in charge of his RTW-process. In the current time set, in which financial
cuts determine largely the political and economical climate, it might be difficult to accompany patients to work. However, reintegration companies, not connected to the hospital, may have the resources to do this and therefore should be enabled.

Another possible improvement of the intervention could be to make the exercises even more interactive and based on problem situations patients experienced. Group dynamics could be stimulated by including more exercises in which the patients have to work together to reach a goal. This was difficult to realize in the pilot study because of the small groups. Patients are often told during occupational therapy that they are allowed to carry or lift, for instance, 1 kilogram. For most patients this is very abstract. An idea suggested by one of the patients was to have some objects of different weights on the table during a session, so patients could actually feel the differences. In extension of this, it could be considered to also use dynamometers so patients can see how much force is used when handling specific objects, or for instance, when turning a key or making work specific movements. These kinds of exercises would make it easier for patients to use the learned skills in real life, as it relates more to their home or work setting. This could be a helpful addition to the intervention.

Follow-Up of the Intervention

When patients have participated in the intervention, but difficulties remain with finding appropriate tasks or jobs for the (partly) disabled employee on both the short and long term, job carving might be a useful follow-up solution. In job carving, subtasks are split from job functions that can be performed by the hand-injured patient. Often these tasks are overhead, such as administrative tasks or cleaning up. Just these tasks can often be performed by the hand-injured patients, partly because there is less time-pressure on them. If problems remain, a job coach can be consulted, who can support the hand-injured employee at the work floor. Job carving and job consultants provide the opportunity for patients to RTW in an early phase, thereby maintaining a regular work rhythm that the patient was used to before the trauma. Losing the rhythm of working is often seen as a big problem in patients who are on sick leave for prolonged periods of time, as it further slows down the process of RTW. Job carving might be a helpful instrument for patients who experience problems with regard to RTW after the intervention has ended.
Implications of our Findings for Clinical Practice

During rehabilitation treatment of hand-injured patients, clinicians should be paying attention to symptoms of PTSD and pain, as these can delay RTW. Also, if injuries are incurred at work, extra attention should be given to RTW. Aesthetics and pain influenced the occurrence of S-PTSD. Pain is a frequently underestimated problem, as it is invisible and subjective. Rehabilitation specialist should take care of adequate pain treatment and explicitly pay attention to pain during treatment. PTSD is of psychological nature, and therefore patients may frequently feel less comfortable sharing complaints with their doctors. Clinicians should look carefully for signs of PTSD, ask patients about specific symptoms and if present, refer them to a psychologist.

Disturbed aesthetics are difficult for a rehabilitation specialist to solve. Therefore, in the very early stage of treatment, when the patient is still admitted to the hospital, reactions of the patients should be carefully monitored when dressings are changed or the wound is taken care of. In most cases, aesthetics can not be changed, but a psychologist may be able to help the patient cope with it.

Most clinicians do not have the time to specifically pay attention to RTW, as they usually are on time-pressure in the given time for a treatment session and frequently clinicians do not regard supporting patients in their RTW as their task. Therefore it is advisable to organize group sessions as proposed in this thesis. Another benefit of these group sessions is the possibility for patients to share experiences with other patients. This is a very important aspect of the intervention, as sharing experiences normalizes the situation for patients.

The proposed intervention is very well tailored to clinical practice, as patient values and clinical expertise were combined with latest scientific insights in a process of co-creation. Also feasibility has been taken into account, providing suggestions for further implementation. Because of this, the intervention can easily be implemented in regular health care of hand-injured patients. Preferably, the intervention should be included in general treatment of hand-injured patients and given on fixed days and times, thereby creating the opportunity to plan individual appointments of patients in conjunction with the RTW sessions. Another option could be to organize the (individual) sessions at the workplace, given by an occupational psychologist. However, not all occupational health services (arbodiensten) have an occupational psychologist in service that could lead the sessions.
Conclusion

In general, it can be stated that the proposed psychosocial component appears a promising addition to regular treatment of hand-injured patients, as patients who participated in the intervention returned to work earlier than patients who received only regular treatment. However, more research is needed on the active ingredients of treatment and cost-effectiveness.
Reference List


6) Burwell R, Chen CP. Applying the principles and techniques of solution-focused therapy to career counselling. Counsell Psychol Q 2006;19(2):189-203.


