CHAPTER 3

A longitudinal study of correlations between three burnout dimensions among teachers of the studyhome

Abstract

With this paper we aim to longitudinally study the correlations between the three burnout dimensions among teachers of the upper classes of the general secondary education (HAVO and Atheneum) in the Netherlands while implementing essential educational changes, the so-called "study-home". We know of only few longitudinal studies dealing with burnout among teachers (Brouwers, 2000), and even no studies among teachers implementing drastic educational innovations. Teachers who find themselves in this educational setting may doubt their capabilities in achieving the educational goals intended.

We hypothesize that as a result of this diminished personal accomplishment will appear as the first indication of the onset of burnout, especially because the teachers had hardly been trained in the implementation of the innovations. If our hypothesis is not rejected, our results will confirm the findings of Van Dierendonck, Schaufeli, and Buunk (2001).

Burnout among teachers

According to the well-known definition framed by Schaufeli, Maslach and Marek (1993) the burnout syndrome consists of emotional exhaustion, depersonalization and reduced personal accomplishment. Emotional exhaustion refers to feelings of the teacher's emotional and physical tension and the lack of emotional reserves. Depersonalization refers to a detached, cynic and cold attitude of the teacher towards pupils. And finally, reduced personal accomplishment indicates that the teacher thinks he is less capable to educate and teach class as should be necessary.

Burnout is viewed as a situation of physical and emotional exhaustion (Kremer-Hayon & Kurtz, 1985). On the other hand Farber (1984b) says that burnout is the final step in a series

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of unsuccessful attempts to cope with negative stressful conditions. As most contributions on
the subject are of a cross-sectional and correlational nature, it is desirable and advisable that
longitudinal studies should lead to more indisputable conclusions on the development of the
burnout process. In the past, several developmental models have been proposed concerning
the sequence of the three burnout dimensions. According to Golembiewski, Munzenrider, and
Stevenson (1986) the burnout process develops from depersonalization via reduced personal
accomplishment to emotional exhaustion (the GMS-model). The findings of the GMS-model,
also called the progressive phase model, coincide with the ones in studies of Burke (1989),
Gryskiewicz and Buttner (1992), and Scherer, Cox, Key, and Stickney (1992). According to
this model depersonalization develops when professional detachment in the social relations
with pupils or clients is no longer of a functional nature. Teachers' social relations with others
have very often gone wrong, just as their daily professional performance level. Consequently
negative self-evaluations develop, which lead to reduced accomplishments to cope with the
work demands so that feelings of emotional exhaustion develop.

The model is however criticized on methodological grounds. Leiter (1989) says that
dichotomizing continuous scales, being the common procedure in the GMS-model, leads to a
loss of information and consequently to a less sensitive analysis. Moreover, a re-analysis of
the Golembiewski data showed that the majority of significant differences found between the
phases of burnout could be explained by levels of emotional exhaustion, thus neglecting the
explanatory influence of the other two dimensions of burnout.

Leiter and Maslach (1988) deviate from the GMS-model stating that the burnout
process starts with emotional exhaustion, is then followed by depersonalization which in turn
is responsible for feelings of reduced personal accomplishment (the LM-model). In this model
emotional exhaustion, originating from social- psychological working conditions appears to
be the origin of burnout. The emotional exhausted person will develop withdrawal strategies,
become cynic and aloof in social contacts with clients or pupils. As a result of this the job
performances will be judged ineffectively and negatively.

Support for the sequence suggested in the LM-model can be found in cross-sectional
studies of Byrne (1994), Cordes, Dougherty, and Blum (1997), and of Greenglass, Burke, and
Konarski (1997). Cross-sectional studies, however, only present correlations found at one
point of time and therefore can not definitely give evidence whether the correlations found
really hold out at other moments or during a longer period of time. Longitudinal studies are
very welcome to draw more definite conclusions. In Leiter's longitudinal study (1990) the
only longitudinal reciprocal correlation between the three burnout dimensions was found
between reduced personal accomplishment and emotional exhaustion. In a second longitudinal study Lee and Ashforth (1993a) unconditionally supported the LM-model. Unfortunately, by omitting a systematic analysis of all possible synchronous and longitudinal models in both directions neither Leiter (1990) nor Lee and Ashforth (1993a) have been able to prove that their model is the best of all other possible models (Zapf, Dormann, & Frese, 1996). Brouwers (2000) presented results on the sequence of the burnout dimensions meeting the criticism on the studies mentioned before. The systematic analysis of all possible synchronous and longitudinal models led to the following sequence: emotional exhaustion → personal accomplishment → depersonalization.

Van Dierendonck, Schaufeli, and Buunk (1997) produce two reasons that express the importance of the sequence of the dimensions of burnout. First, knowledge about the correct sequence is likely to facilitate the recognition and diagnosis of the onset of burnout, which enables the prevention and alleviation of the accompanying symptoms of burnout at an early stage. Second, it may be useful to develop a process model that has been empirically validated and can therefore contribute to a reliable understanding of the antecedents and consequences of burnout.

The present study examined the direction and time frame (8 months synchronous or longitudinal) of the correlations between the three dimensions of burnout among secondary school upper class teachers longitudinally. We like to add additional reasons to the ones stated by Van Dierendonk et al. (1997). First, so far research has not presented final conclusions about the sequence of the burnout dimensions. Second, it may be assumed that the sequence of the dimensions will vary according to the respondents' occupation. It seems plausible that the emotional and social-psychological demands made on teachers are in some respects quite different from the demands made on nurses or doctors and that these specific demands will be responsible for the differences found in burnout models. Professional detachment for instance, that may be functional in caring for the sick, is rather unprofessional when teaching young people (Golembiewski, et al., 1986).

Method

Participants

We asked teachers implementing educational innovations in the upper classes of general secondary education in the Netherlands to participate in our investigation. The respondents at Time 1 (N = 490) were those who had returned completely filled out questionnaires (February 2000). After a time interval of 8 months, at Time 2, October 2000,
these 490 teachers were sent questionnaires again and this time 197 teachers participated in our second study by returning completely filled out questionnaires, a percentage of 40.2. We received questionnaires from 44 (22.3%) female teachers and from 153 (77.7%) male teachers. The male teachers' average age was 48.64 (SD = 6.97), and the female teachers' average age was 42.52 (SD = 7.92). The average number of years working as a teacher was 22.82 (SD = 8.15) with a minimum of 1 year and a maximum of 38 years. There were no significant differences between Time 1 and Time 2 concerning the teachers' gender, age or number of years of experience.

Measure

Burnout. The Dutch version of the Maslach Burnout Inventory for teachers (MBI-NL-Ed; Schaufeli & Van Horn, 1995) was used to assess teachers' burnout level. The instrument consists of twenty items, and is divided into three sub-scales: (1) emotional exhaustion (EE; 8 items), (2) depersonalization (D; 5 items) and (3) personal accomplishment (PA; 7 items). Teachers could score on a 7-point scale, from “never” to “always”. It is assumed that teachers will suffer from burnout when their scores on emotional exhaustion and depersonalization are high, and the scores on personal accomplishment are low. Examples of items indicating emotional exhaustion are “At the end of the working day I feel empty”, and “I feel tired when I get up in the morning, facing a new working-day again”. Examples of depersonalization items are “I have the feeling that I treat some pupils in an impersonal way”, and “I don't really care what will become of my pupils”. Examples of items indicating personal accomplishment are “When I have finished my instruction, I look back on it full of satisfaction” and “I have the feeling I achieve many things of great value in this job”. The three-factor structure of the Dutch version of the Maslach Burnout Inventory for teachers has been investigated with confirmatory factor analysis (Schaufeli, Daamen, & Van Mierlo, 1994).

Procedure

We approached the same 33 schools that had participated in our first study. It appeared that 28 schools were willing to take part in the second study, whereas 5 schools refused participation for reasons unknown to us. The MBI-questionnaire, the accompanying letters, and the envelopes for returning the questionnaire were mailed to the principals with the request to hand them to teachers working in the upper grades of HAVO and/or VWO (schools in the Dutch higher general secondary school system preparing students for advanced polytechnic education or universities). In the letter of introduction the purpose of the investigation was explained and the teachers were kindly asked to participate in the investigation for a second time by filling out the self-report questionnaire and sending it back.
in a postage free envelope. To increase the return rate, three weeks after the first mailing repeat letters were sent to the principals requesting them to hand these letters to the teachers.

Analysis

A structural equation modeling procedure (SEM) with maximum likelihood estimation utilizing the AMOS 3.6 computer program was employed to determine the most likely direction and time frame (8 months longitudinal or synchronous) of the correlations between the burnout dimensions (i.e. emotional exhaustion, depersonalization, and personal accomplishment). In testing longitudinal relationships, SEM procedures have several advantages in comparison with other analytical procedures, such as the cross-lagged panel correlation technique and the hierarchical regression analysis: SEM procedures provide tests that allow for directional conclusions, and they can include reciprocal relationships between variables (Kessler & Greenberg, 1981; Zapf, Dormann, & Frese, 1996).

SEM procedures start with the formulation of several plausible models specifying the relationships between a set of variables. As a model is being formulated in SEM, the parameters of the relationships between the variables, i.e. the regression coefficients, are specified as either fixed or free. Fixed parameters are usually set at constant values (e.g. zero) while free parameters are regarded as non-zero in the population from which the sample is selected. For example, in order to specify that variable X has no effect on variable Y, the parameter concerned must be fixed at zero. However, when it is assumed that variable X does have an effect on variable Y the parameter concerned must be released to estimate.

Figure 1 is a graphical illustration of the described theory in the preceding paragraph. The model shown consists of four variables, the two burnout dimensions emotional exhaustion and depersonalization at time 1 and time 2.

To examine the correlations between the burnout dimensions a three-step procedure was followed (Brouwers, 2000; Lee & Ashforth, 1993a). In step 1 two synchronous models-named synchronous type 1 models-were compared with the stability model to reveal whether the synchronous paths were significant. A stability model consists of \( X_1 - X_2 \) and \( Y_1 - Y_2 \) relationships (stability paths) which reflect the amount of change in a single variable across time (Maruyama, 1998). In the stability model, only the stability paths were released (arrows a and b in Figure 1), while the other paths (arrows c, d, e, f, g, and h) were fixed at zero (Maruyama, 1998). A null model (see Table 1) represents the most restricted model, specifying that the variables (here emotional exhaustion and depersonalization) are mutually independent (Bentler & Bonnet, 1980).
In a synchronous type 1 model, the stability paths (arrows a and b) and the synchronous paths at Time 1 and Time 2 which go in the same direction were released (e.g. Time 1 emotional exhaustion $\rightarrow$ Time 1 depersonalization [arrow c], and Time 2 emotional exhaustion $\rightarrow$ Time 2 depersonalization [arrow d]) while the other synchronous paths as well as the lagged paths were fixed at zero (arrows e, f, g, and h).

In step two, two synchronous models with equality constraints- named synchronous type 2 models- were compared with the best fitting synchronous type 1 model to reveal whether the synchronous paths met the stationary assumption (James, Mulaik, & Brett, 1982). In a synchronous type 2 model, the stability paths at Time 1 and Time 2 which go in the same direction were constrained to be equal (e.g. Time 1 emotional exhaustion $\rightarrow$ Time 1 depersonalization [arrow c] was set equal to Time 2 emotional exhaustion $\rightarrow$ Time 2 depersonalization [arrow d]); the other synchronous paths as well as the lagged paths were fixed at zero (arrows e, f, g, and h).

In step 3, two longitudinal models were compared with the best fitting synchronous type 2 model to reveal whether the lagged paths were significant. Then the best fitting longitudinal model was compared with the best fitting synchronous model to reveal which model fitted the data best. In a longitudinal model, the stability paths (arrows a and b) and one of the lagged paths were released (e.g. Time 1 emotional exhaustion $\rightarrow$ Time 2 depersonalization [arrow g]), while the synchronous paths at Time 1 and Time 2 which go in
the same direction as the released lagged path were constrained to be equal (e.g. Time 1 emotional exhaustion → Time 1 depersonalization [arrow c] was set equal to Time 2 emotional exhaustion → Time 2 depersonalization [arrow d]); the other lagged path and the other synchronous paths were fixed at zero (arrows e, f, and h).

After models are formulated in SEM, the extent to which each model fits the data is estimated using chi-square statistic. The chi-square statistic is used to compare the observed co-variances, i.e. the covariances calculated from the data matrix, with the implied covariances, i.e. the covariances implied by the model. An arbitrary set of initial values which are possible within the boundaries of the model serve as a starting point for the implied covariances. Because the initial values are arbitrary, the fit is likely to be poor. One or more of the initial values are therefore changed to improve the fit, and the process is repeated with this new set of trial values. This cycle is repeated again and again until the optimum solution is found (Loehlin, 1998). The implied covariances of the optimum solution are then compared with the observed covariances using chi-square statistic. If the chi-square statistic is small compared with the degrees of freedom, the model provides a plausible representation of the relationships between the variables in the population (Bentler & Bonnett, 1980).

Chi-square difference tests were used to compare the relative fit of the models. The chi-square statistic for these tests is simply the difference between the separate chi-square statistics of the compared models, while the number of degrees of freedom (df) is simply the difference between their dfs (Loehlin, 1998). The model that performs better than the comparison models – as reflected in the chi-square difference tests – shows to have a significantly smaller difference between its implied covariances and the observed covariances than the comparison models.

Besides the chi-square statistic, the Adjusted Goodness of Fit Index (AGFI), the Tucker-Lewis Index (TLI), and the Comparative Fit Index (CFI) were used to examine the models’ fit. The TLI and CFI are found to be relatively robust to sample size bias and to take model simplicity and chi-square values into consideration (Bentler, 1990; McDonald & March, 1990). The TLI and the CFI were used to compare the models; the stability model served as baseline. If TLI and CFI exceed .90 the fit of a model can be considered as acceptable (Bentler & Bonett, 1980). The model which performed significantly better than the comparison model – as reflected in the chi-difference tests – and which produced the largest value on TLI and CFI was considered to fit the data best.
Results

Table 1 shows the means, the standard deviations, the internal consistency measures (Cronbach's alpha), and the inter-correlations of the scales. The reliability of the scales was except for depersonalization, .70 or higher, which is adequate according to the criterion of .70 (Nunnally, 1978; Nunnally & Bernstein, 1994).

Table 1
Means, Standard Deviations, Internal Consistency Measures (Cronbach's alpha), and Intercorrelations of the Scales (N=197)

<table>
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<tr>
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<th>M</th>
<th>SD</th>
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<th>3</th>
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<td>.56*</td>
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<td>-.36*</td>
<td>-.44*</td>
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<td>9.14</td>
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<td>.69*</td>
<td>.41*</td>
<td>-.36*</td>
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<td>.32*</td>
<td>.45*</td>
<td>-.37*</td>
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<td>-.29*</td>
<td>.65*</td>
<td>-.47*</td>
<td>-.48*</td>
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* P < .01

Table 2 shows the fit of the models so as to examine the synchronous and longitudinal relationships between the three dimensions of burnout. The results of step 1 concerning the relationship between emotional exhaustion and depersonalization or 77.7% indicated that the synchronous type 1 models are significantly superior to the stability model, as reflected in the chi-square difference tests (Δχ²(2) = 124.33, p < .01 and Δχ²(2) = 133.16, p < .01). However, the synchronous type 1 model with the released paths of depersonalization to emotional exhaustion fitted the data better than the other synchronous type 1 model as is reflected in the value on the fit indexes (e.g. TLI is .92 and .79, respectively).
Table 2
Chi-Squares, Chi-Square Differences, and Fit Indexes of the models (N=197)

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<tr>
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<th>$\chi^2$</th>
<th>df</th>
<th>$\Delta \chi^2$</th>
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<th>TLI</th>
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The results of step 2 indicated that the synchronous type 2 models are significantly inferior to the best fitting synchronous type 1 model, as becomes clear from the chi-square difference tests ($\Delta \chi^2 = 9.58, p < .01$ and $\Delta \chi^2 = 5.92, p < .05$). The results of step 3 show that the longitudinal model with a released lagged path from emotional exhaustion to depersonalization is superior to the other longitudinal model (TLI is respectively 1.00 and .95), to both of the synchronous type 2 models ($\Delta \chi^2 = 13.21, p < .01$ and $\Delta \chi^2 = 11.55, p < .01$), and to the best fitting synchronous type 1 model (TLI is respectively 1.00 en .92). To put it briefly, the results indicate that the longitudinal model with the released lagged path of emotional exhaustion to depersonalization fits the data best.

The step 1 results of the relationship between personal accomplishment and emotional exhaustion indicated that the synchronous type 1 models are significantly superior to the stability model as becomes clear from the chi-square difference tests ($\Delta \chi^2 = 50.63, p < .01$
and $\Delta \chi^2 (2) = 63.71, p < .01$). However, the synchronous type 1 model with the released paths from emotional exhaustion to personal accomplishment fitted the data better than the other synchronous type 1 model as reflected in the values on the fit indexes (e.g. TLI is .95 and .54), respectively. The results of step 2 show that the best fitting synchronous type 1 model is not significantly different from the best fitting synchronous type 2 model ($\Delta \chi^2 (1) = .40, p = .5$ respectively). However, the last mentioned model is preferable, for the best fitting model is the most parsimonious model that is not significantly inferior to another (here the type 1 model). The results of step 3 indicated that both longitudinal models are not significantly different from the best fitting synchronous type 2 model ($\Delta \chi^2 (1) = 1.99, p = .16$ and $\Delta \chi^2 (1) = 3.38, p = .07$). The results indicated that the synchronous type 2 model with the released paths from emotional exhaustion to personal accomplishment is the best fitting model.

As for the relationship between personal accomplishment and depersonalization, step 1 indicated that the synchronous type 1 models fitted the data significantly better than the stability model, as becomes clear from the chi-square difference tests ($\Delta \chi^2 (2) = 67.30, p < .01$ and $\Delta \chi^2 (2) = 78.87, p < .01$). However, the synchronous type 1 model with the released paths from depersonalization to personal accomplishment fitted the data better than the other synchronous type 1 model, as can be derived from the fit indexes (TLI is respectively 1 and .73). The results of step 2 indicated that the best fitting synchronous type 1 model is not significantly different from the best fitting synchronous type 2 model ($\Delta \chi^2 (1) = .18, p = .67$), although the last mentioned model is preferable as it is more parsimonious than the synchronous type 1 model. The results of step 3 indicated that the best fitting longitudinal model was not significantly different from the best fitting synchronous type 2 model ($\Delta \chi^2 (1) = .86, p = .35$). So, the results indicated that the synchronous type 2 model with the released paths from depersonalization to personal accomplishment was the best fitting model.

**Discussion**

In the present study we examined the direction of the correlations between the three dimensions of burnout among secondary school teachers implementing educational innovations in the Netherlands at Time 1 (February, 2000) and Time 2 (October, 2000). We hypothesized that burnout among secondary school teachers in an innovative setting would begin with feelings of diminished personal accomplishments, followed by the two other
dimensions. This sequence was also suggested in a recent study in which data from 5 previous longitudinal studies were re-analyzed (Van Dierendonck, Schaufeli, & Buunk 2001). Our assumption, however, was not supported by the analysis of the acquired data. In the present study we found that the burnout process starts with feelings of emotional exhaustion followed by depersonalization, which is in accordance with Leiter and Maslach (1988), and partly with Brouwers (2000).

The results indicated that the longitudinal model with the released lagged path of emotional exhaustion to depersonalization fitted the data best. Leiter and Maslach (1988) assert that human service workers interact in a cold and callous way with their clients only after symptoms of emotional exhaustion appear. Studies on supervisors and managers (Lee & Ashforth, 1993b), human resource employees (Cordes et al., 1997), or students (Byrne, 1994; Greenglass et al., 1997), are in agreement with this statement. It seems that human service workers develop depersonalized behavior patterns in order to mentally partly or completely withdraw from those who make demands on them. In this way they can tune these demands to their emotional reserves and by doing so they create an emotional buffer hampering their social relations with others. (Cordes et al., 1997).

The direction of the correlations between personal accomplishment and emotional exhaustion is from emotional exhaustion to personal accomplishment. The synchronous type 2 model with equality constrained paths of emotional exhaustion to personal accomplishment fitted the data best. This result is in accordance with Leiter and Maslach (1988) for they showed that emotional exhaustion influences personal accomplishment mediated through depersonalization. In a later study Leiter (1989) found a direct correlation between emotional exhaustion and personal accomplishment.

Finally, the direction of the relationship between depersonalization and personal accomplishment showed an effect of the former on the latter. The synchronous type 2 model with equality constrained paths of depersonalization to personal accomplishment fitted the data best. This result is not in accordance with Brouwers (2000). In agreement with Leiter and Maslach (1988) we found that depersonalization precedes diminished personal accomplishment. The reason may be that symptoms of depersonalization, such as callous and cold behavior in dealing with others, are likely to be far beyond functional professional detachment and will thus lead to negative self-evaluations of job accomplishments.

The finding that depersonalization precedes diminished personal accomplishment may be due to two reasons. First, our respondents had to implement innovations that were brought about by top-down strategies (by the Ministry of Education and Science). Teachers may have
got the idea that they were used as "instruments". The lack of ownership of the innovations may have led to feelings of frustration resulting in job dissatisfaction that shows high correlations with depersonalization (Van Dierendonck et al., 2001). Second, being rather unprepared for the implementation of the innovations, the teachers may have lacked effective communication skills that are essential for all those participating in the change process (Curtis & Stollar, 1996), thus falling back on depersonalized behavior in their relations with students. Our findings are in line with studies claiming that depersonalization is a reaction to emotional exhaustion (Friedman, 1996; Lee & Ashforth, 1993a; Leiter & Maslach, 1988; Leiter, 1993).

In sum, our study suggests that the direction of the relationships between the dimensions of burnout among teachers in an innovative educational setting begins with emotional exhaustion, and is then followed by feelings of depersonalization and a decrease in the level of personal accomplishment. It may be quite possible that feelings of doubt and uncertainty about the new daily classroom practices contribute to a decrease of emotional reserves. In spite of the fact that there were strong reasons to assume that burnout among teachers in the unique setting of educational innovations would begin with a decrease of the level of personal accomplishment, we had to reject this assumption. Irrespective of the teachers' environmental setting burnout among teachers appears to start with emotional exhaustion. Then depersonalization and personal accomplishment, the two attitudinal dimensions of burnout appear.

It remains rather difficult to determine the definitive and conclusive direction between burnout dimensions among human service professionals in general, for the comparable studies mentioned before were conducted among different groups of professionals (We examined secondary school teachers, Van Dierendonck et al. (1997) nurses, therapists and physicians, and Lee and Ashforth (1993b) managers and supervisors). This may be an explanation for the differences found in the various models. Models attempting to determine the direction of the burnout dimensions may have to be framed according to the respondents' profession. Farber (2000) states that even in one specific group of professionals, viz. teachers, three different types of burnout can be distinguished. So, it seems plausible to assume that burnout differs in onset, development, and dimension direction according to the profession of the person(s) involved.

This study has some limitations. First, acquiring data by means of questionnaires is a serious threat to the validity of the results. The correlations may have been obscured by consistency effects and common method variance. However, we know of no burnout measure to meet these objections (Schaufeli, Enzmann, & Girault, 1993). A second limitation of this
study is the rather large number of non-respondents, leaving the question unanswered whether the respondents are representative for all teachers of the "Studyhome". In addition to these problems longitudinal studies among teachers are particularly difficult to execute, for teachers may have quit, found a new job, or been appointed at another school or in a new position.
REFERENCES


Chapter 3


