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ABSTRACT

This paper presents a meta analysis of the literature on special education teacher burnout. Discussion of a theoretical framework reviews theoretical models of burnout, especially Maslach's model, and stages and constructs of burnout. The meta analysis of 46 studies of special educator burnout with sufficient data for further quantitative analysis addressed 23 research questions. Findings are reported in terms of descriptive analysis of primary studies, descriptive analysis of statistical tests, and independent meta analyses of selected findings. The study found small to negligible negative mean correlations for relationships between the burnout constructs of emotional exhaustion, depersonalization, and personal accomplishment and the predictor construct of experience, suggesting that burnout tends (slightly) to decrease as experience increases. Also, small, negative relationships between age and the burnout constructs of emotional exhaustion and depersonalization suggest that emotional exhaustion and depersonalization decrease as age increases. Recommendations are offered for research management standards and advancing knowledge about burnout among special educators. (Contains approximately 140 references.) (DB)

Burnout among Special Educators: A Meta-Analysis

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Burnout among Special Educators: A Meta-Analysis

It comes as no surprise that special education is a high-need field. In its most recent report to Congress, the United States Department of Education (1997) cites that 26,000 persons teaching special education are not certified to do so, and almost 3,700 special education jobs are actually vacant. Boe, Cook, Kaufman, and Danielson (1996) cite five evidenced reasons for the shortage of special education teachers: (1) a high attrition rate of these teachers, (2) a large number of teacher transfers from special education to general education fields, (3) an increase in the number of special education jobs needed in the past (these researchers found that within eight years, the number of new special education jobs increased 19%, over 7,000 jobs per year), (4) a continued increase of new special education jobs in the future, and (5) a decline in graduates from preparatory programs in special education. These authors go on to say that the special education teacher shortage is now a problem of both "quality and quantity" that has reached "pervasive and critical dimensions" (p. 2). Furthermore, the number of school-aged children is continuing to rise, as is the number of students who are eligible for special education (Cooley & Yovanoff, 1996; Frank & McKenzie, 1993). Also compounding the problem is the extremely high attrition rate for special education teachers, which in some parts of the United States has reached up to 30%. Burnout and its accompanying characteristics have been recognized as correlates to this high attrition rate (Cooley & Yovanoff, 1996).

Many scholars have attempted to define the construct of burnout. Originating a mere twenty-five years ago with Freudenberger's (1977) research in the helping professions, burnout remains a relatively new area of study in the social sciences (Banks

& Necco, 1990; Stout, 1987). Freudenberger (1977) first coined the term "burnout," using it to describe persons who appear to be depressed with their jobs. Burnout can be identified through the appearance of fatigue, persistent colds, headaches, insomnia, and exhaustion; these signs are caused by over-exertion of a person's energy, strength, or resources. Behavioral indicators of burnout such as anger, irritation, cynicism, paranoia or drug use may also be apparent (Stout, 1987). Blase broadens this definition of burnout so that it includes any adverse reaction that occurs from stress in the workplace (as cited in Dedrick & Raschke, 1990).

Most authors tend to agree that burnout refers to an extreme form of job stress (Cherniss, 1988; Dedrick & Raschke, 1990; Maslach, 1982; Wisniewski & Gargiulo, 1997); in fact, some researchers go so far as to make these two terms, job stress and burnout, synonymous (Male & May, 1997). Beer and Beer (1996) state that burnout results from chronic stress in the workplace. Christina Maslach (1982), perhaps the most widely accepted authority on burnout, describes this condition as "a response to the chronic emotional strain of dealing extensively with other human beings, particularly when they are troubled or having problems" (p. 3); therefore, in Maslach's opinion, burnout can be defined as "one type of stress" (p. 3).

While often defining burnout by its characteristics, most researchers do agree that burnout can be attributed to some type or combination of types of external or environmental causes (Morgan & Krehbiel, 1985). Other researchers, however, explain burnout not as a form of stress, but rather as the "chronic inability to cope with stress" (Greer & Greer, 1992, p. 169). In a study by Torelli and Gmelch (1992), stress was found to be the most common predictor of burnout. Burnout is also frequently defined

by the appearance of its symptoms: feeling irritable, tired, angry, and/or frustrated (Gold, 1989); becoming detached, cynical, or apathetic are also symptoms often used in defining burnout (Guglielmi & Tatrow, 1998). Hudson and Meagher (1983) cite Freudenberger's description of burnout as "a state of fatigue or frustration brought about by devotion to a cause, way of life, or relationship that failed to produce the expected reward" (p. 47). These authors further explain that burnout usually affects persons who are highly motivated, hard-working, and idealistic in the workplace. The failure of this idealism brings about the feelings most often associated with burnout.

Obviously, then, there is no clear or singular definition for the construct of burnout. For this reason, in subsequent chapters of this inquiry the term burnout will denote the author-identified construct of burnout as declared in the population of primary studies addressing burnout among special educators. Distinct constructs of burnout, such as emotional exhaustion, depersonalization, and personal accomplishment (as described by the Maslach Burnout Inventory, detailed in the upcoming section of this inquiry) will be stated as they appear in this population of primary studies.

Theoretical Models of Burnout

Maslach's Model of Burnout. By far the most widely used and accepted theoretical model of burnout is the model created by Christina Maslach. Measured according to the Maslach Burnout Inventory, this model focuses on three constructs: emotional exhaustion, depersonalization, and reduced personal accomplishment (Maslach, 1982). The inventory contains twenty-two statements about the workplace/job, and participants are to score each statement twice, once for intensity and once for frequency. *Intensity* scales range from one, indicating very mild or barely noticeable, to

seven, very strong or major. *Frequency* scales range from one, few times a year, to six, every day. Burnout is indicated by higher scores on the depersonalization and emotional exhaustion scales and by lower scores on the personal accomplishment scale. It is important to note, however, that Maslach's theoretical model of burnout does not indicate the absolute presence or absence of burnout; rather, it describes a person's place on a burnout continuum, such as "more or less" burned out (Crane & Iwanicki, 1986). Zabel and Zabel (1983) go on to explain that Maslach's burnout model demonstrates burnout not as an either-or state of being, but rather as a matter of degree. Freed (1994) expounds further upon this idea by describing burnout as a continuous variable (rather than dichotomous), measured in terms of low, moderate, or high rates of experience.

Other Models of Burnout. Few researchers other than Maslach have developed such thorough models of burnout and its characteristics. Those researchers who have, however, tend to develop models that describe burnout as a series of stages (Harmon-Vaught, 1985). For example, Edelwich and Brodsky (1980) developed a four stage model of burnout. This model examines burnout as it evolves from enthusiasm (stage one) to stagnation (stage two), frustration (stage three), and apathy (stage four).

According to Jones and Emanuel (1981), the stages of burnout follow a more chemical analogy. These authors describe burnout through the following stages: heating up (stage one), boiling (stage two), and explosion (stage three).

Similarly, Spaniol (1979) uses the terminology of physical burns to describe burnout. First degree burnout involves brief periods of being tired, grouchy, anxious, and ambivalent. Second degree burnout involves longer bouts of these same feelings. With

third degree burnout, physical manifestations began to occur, including headaches, ulcers, and back aches.

Yet another stage approach to burnout can be found in the work of Veninga and Spradley (1981). In this model, stage one is called the "honeymoon," in which one is enthusiastic and excited about a job. The second stage is called the "fuel shortage," in which going to work requires a conscious effort and dissatisfaction with one's job begins to occur. Although physical manifestations of stress begin to occur during stage two, stage three finds these physical symptoms becoming chronic conditions. During the next stage, the "crisis" stage, physical symptoms become perilous, and psychological symptoms such as cynicism, apprehension, and disappointment reach extreme proportions. The final stage of this model results in final sense of defeat, a total loss of control, and the termination of one's position at work.

A final stage model of burnout is attributed to Baldwin (as cited in Hudson & Meagher, 1983, p. 51). Baldwin's model contains five stages of burnout:

Stage I:	Intimate Involvement (new job, overinvolvement)
Stage II:	Exhaustion/Questioning (physical and emotional fatigue plus "grass is greener" thoughts)
Stage III:	Balancing Act (conscious/unconscious choices causing adequate or inadequate coping mechanisms to develop)
Stage IV:	Withdrawal/Disappointment (coping devices fail thus affecting work and home)
Stage V:	Terminal Cynicism (self-preservation ["me"] over self-management)

Constructs of Burnout. Because Maslach's theoretical model of burnout is by far the most accepted explanation of its kind, the three constructs found in this model are also the most widely used burnout constructs. These constructs include emotional exhaustion, depersonalization, and personal accomplishment. The three subscales of the Maslach Burnout Inventory are quite distinct. Emotional exhaustion refers to cases of burnout in which a person feels emotionally (or psychologically) tired or worn out, with little or no energy. Depersonalization describes a condition in which a person feels insignificant or meaningless. His or her reactions to other persons are less caring and more harsh than before. Reduced personal accomplishment is used to explain a person's feelings of inadequacy, futility, or dissatisfaction in the workplace (Crane & Iwanicki, 1986; Gmelch & Gates, 1998). All three subscales are measured according to frequency and intensity, both of which have been found to vary according to the subject's age, gender, marital status, and level of education (Crane & Iwanicki, 1986). Interestingly enough, older teachers who have been in the classroom for a longer period of time demonstrate lower levels of burnout than younger, less experienced teachers (Banks & Necco, 1990; Crane & Iwanicki, 1986; Greer & Greer, 1992).

A great deal of literature has been written on special education and burnout, each study with its own unique findings and viewpoints. After a thorough search of the literature, only one study was found that attempted to synthesize this large amount of important information. This meta-analysis (Jarvis, 1988) is over ten years old, meaning that a great deal of new research has been made available since its publication. A current meta-analysis of studies concerning burnout and special educators is greatly needed. In addition, the previous synthesis included only research on teachers of special education;

no consideration was given to other certified personnel within the special education field. A thorough investigation of the literature involving these three roles (teachers, assessment personnel, administrators) is long overdue. The need for this type of study can best be explained by Hoy (1978) when he says, "There is little in the way of application, improving or building on others' work. We rarely base new work on existing work" (p. 5). Campbell (1979) concurs with this opinion; he believes that in education there has been "little cumulative building of knowledge in the field" (p. 10). Thus, a plethora of information on special educator burnout exists, but no analysis has been made of it in order to further the current understanding of this topic. By utilizing the meta-analytic techniques of Hunter and Schmidt (1990), this problem was addressed.

INTENT OF THE INQUIRY

Meta-analysis of topics in special education is also being encouraged by other researchers. Guskin (1984) states that "meta-analysis is to be considered a powerful tool that has already begun to help us reduce the confusion of a growing and heterogeneous research literature" (p. 79). Because inquiry in special education often involves small groups or even individuals, meta-analysis is the tool of choice, for it allows one to synthesize the findings of numerous studies, no matter how small they may be. Kavale (1984) also encourages the use of meta-analysis with special education topics: "the variability in the findings of special education research creates a gap between past and future research, a gap that can be bridged by the intermediate step of synthesizing findings into a comprehensive whole" (p. 62). Indeed, this inquiry synthesizes the vast research on job burnout among special educators in order to offer a more complete and thorough understanding of this important topic.

Objectives and Research Questions

Using the techniques for meta-analysis described by Hunter and Schmidt (1990), six main objectives were accomplished in this study. First, all primary studies from the databases that addressed burnout among special educators and provided sufficient information for meta-analysis were identified; hereafter this group of primary studies will be referred to as the primary study synthesis population. Second, the research hypotheses for each of these primary studies were specified, along with the target population, burnout constructs, and predictor constructs used in the development of these hypotheses. Third, the statistical hypotheses and inferential rules needed for synthesizing the data found in selected research hypothesis were specified. Fourth, population effect sizes for each research hypothesis were estimated. Fifth, moderator variables relative to each research hypothesis were identified. Sixth, the stability of each population effect size was explored.

Accordingly, these six objectives yield 23 research questions, as demonstrated in Appendix A. The first group of 13 research questions described and classified the actual special educator burnout hypotheses investigated in the primary study synthesis population. Answers to these 13 questions fulfilled the aims of the first two research objectives. Two research questions comprised the second group, which described the empirical data provided in each primary study and thereby satisfied the third research objective. The final eight research questions focused on the quantitative synthesis of findings that can increase current knowledge on special educator burnout; answers to these questions satisfied the last three research objectives.

Taken collectively and addressed sequentially, these 23 research questions guided both the theoretical and empirical aspects of this study. Answers to these questions synthesized what was learned from the research on burnout among special educators, as well as provided new data necessary to develop recommendations for improving future research on job burnout.

DESIGN OF THE INQUIRY

The design of this inquiry, modeled after Thompson's (1997) study on job satisfaction, is a 14-stage model, outlined in Table 1. (See Edmonson, 2000, for an elaborated description of the model.) At relevant stages of the inquiry, a group of behavioral science researchers specifically trained in meta-analysis independently classified and coded primary studies and research hypotheses, examined archived data, and estimated effect sizes to ensure reliability of the methods used in this study. Discrepancies were resolved with the assistance of additional trained researchers.

Population and Classification Construction

In Stages 1 through 3, primary studies that addressed burnout among special educators and presented empirical data suitable for quantitative synthesis were identified, and a classification system for each variable examined in this study was developed. This purpose required that classification systems be developed for coding burnout constructs, predictor constructs, and effect size indicators; procedures for meta-analysis were used for classifying effect size indicators (Cohen, 1988; Glass, McCaw, & Smith, 1981; Johnson, 1989). Initially, an exhaustive search of eight major databases using the search terms "burnout" and "special education," was used to identify primary studies relevant to this topic. The following databases were included in the search: ERIC, Social Sciences

TABLE 1

Design of the Inquiry

Stage 1:	Developing the theoretical framework
Stage 2:	Specifying the population
Stage 3:	Designing the classification system
Stage 4:	Designing the coding system
Stage 5:	Coding the data
Stage 6:	Archiving the coded data
Stage 7:	Constructing the research hypotheses inventory
Stage 8:	Identifying the effect sizes
Stage 9:	Describing the primary studies
Stage 10:	Describing the effect sizes
Stage 11:	Estimating the parameters
Stage 12:	Elaborating the moderator variables
Stage 13:	Assessing the stability of findings over time
Stage 14:	Specifying the recommendations

Abstracts, Article First, Wilson, Psyc Info, Dissertation Abstracts International, Education Abstracts, and *Educational Administration Abstracts.*

Data Coding

Stages 4 through 6 were developed in order to reliably transfer data from the synthesis population of primary studies into a SPSS data file in order to facilitate further analysis. These stages were accomplished through (1) the construction of a numerical coding system developed from the classification systems found in Stage 3, (2) the coding of data onto specially designed coding forms, and (3) archiving the coded data into a computer data file. Again, reliability for these procedures was achieved through the independent analysis of behavioral researchers specially trained in meta-analysis.

Research Hypothesis and Effect Size Identification

Stages 7 and 8 involved the construction of the research hypothesis inventory and the identification of the effect size estimates. The research hypothesis inventory was constructed from the stated or implied research hypotheses found in the synthesis population of primary studies. Primary studies in this inquiry contained anywhere from three to 216 stated or implied research hypotheses.

After an inventory of research hypotheses was constructed, effect size estimates were identified or derived. Estimates given in the form of Pearson product-moment correlation coefficients were recorded as is; estimates given in other statistical formats were converted into Pearson coefficients. Each effect size met specific criteria suitable for quantitative synthesis (Hedges & Becker, 1986); thus, each estimate (1) was independent; (2) represented the same construct; and (3) estimated the same statistical parameter.

Descriptive Analysis

Descriptive analyses were conducted in Stages 9 and 10. In Stage 9, the descriptive analysis of the synthesis population of primary studies took the form of univariate distributions and answered research questions 1 through 13. In Stage 10, the descriptive analysis of effect sizes produced univariate distributions of two sets of effect size estimates: (1) the entire set of effect size estimates (as described by this article) and (2) subsets of effect size estimates corresponding to research hypotheses that yielded at least eight effect sizes (as described in Edmonson, 2000).

Meta-Analysis

Stage 11 required that an independent meta-analysis be conducted for each research hypothesis that yielded at least eight effect sizes and the same unit of statistical analysis; all meta-analyses were conducted according to Hunter and Schmidt's (1990) guidelines. In these meta-analyses, effect sizes were weighted according to their corresponding sample sizes. Five estimates were then measured: (1) the effect size estimate of the population correlation; (2) the estimate of the variance of the observed correlations across studies; (3) the estimate of the variance of observed correlations due to sampling error; (4) the estimate of the variance of the population correlation; and (5) the estimate of the standard deviation of the population correlation. From these estimates, conclusions could be drawn concerning the relationships between burnout constructs and predictor constructs.

Moderator variable analysis was conducted in Stage 12, again using the guidelines laid out by Hunter and Schmidt (1990). These authors point out that moderator variables become apparent when there is true variation, not due to sampling error, in correlations

across studies. When true variation does exist, Hunter and Schmidt suggest grouping the correlations into subsets and repeating the procedures for meta-analysis. Moderator variables will then evidence themselves by a mean effect size (effect size estimate of the population correlation) that varies noticeably between the subsets and a lower standard deviation of population correlations for the subsets than for the combined data.

Stage 13 involved a time series analysis for each research hypothesis used in the meta-analyses. The time series analysis required that the effect sizes be disaggregated and ordered according their year of publication. These findings are not described in this inquiry.

Specifying the Recommendations

With reference to the models of Campbell (1979) and Thompson (1997), recommendations from this study dealt with suggestions for reporting research findings and increasing the available knowledge base on special educator burnout.

FINDINGS

Three sections are used to present the findings of this inquiry. Section one elaborates the descriptive analysis of primary studies (research questions 1-13), section two details the descriptive analysis of statistical tests (research questions 14-15), and section three explains findings from the independent meta-analyses (research questions 16-23).

Descriptive Analysis of Primary Studies

The descriptive analysis of primary studies was guided by the first 13 research questions and fulfilled the intentions of the first two research objectives

Historical Overview. Stage 2 of the design of the inquiry explained the procedures for content analysis of the primary studies identified in this inquiry. Of the 470 primary studies initially identified by the search procedure, 230 were classified as actually addressing special educator burnout, as declared by the author; of these 230 studies, 123 presented quantitative findings. Of the 123 primary studies addressing burnout among special educators and containing empirical findings, only 46 studies contained sufficient data for further quantitative synthesis, meaning that only 37% (46 of 123) of studies on special educator burnout contained Pearson product-moment correlations or statistical data sufficient to derive such correlations. 63% of the available primary studies contained insufficient data to be included in this inquiry. The synthesis population of primary studies appears in Table 2. (In Table 2, database number represents the database in which the primary study was first found; many primary studies were found in multiple databases. The numbers represent the following databases: (1) Jarvis dissertation, (2) ERIC, (3) Social Sciences Abstracts, (4) Article First, (5) Wilson, (6) Psyc Info, (7) Dissertation Abstracts International, (8) Education Abstracts, and (9) *Educational Administration Abstracts.*)

Target Population. Special education teachers represented the target population in 37 of the 46 (80.4%) primary studies that comprised the synthesis population, followed by special education directors in five primary studies (10.9%). Public K-12 schools represented the largest target population subgroup in 24 of the 46 primary study synthesis population. All 46 primary studies from the synthesis population employed the individual as the unit of analysis.

Table 2
Synthesis Population of Primary Studies by Database, Study Number, Author, Year, Number of Research Hypotheses, and Percent of Research Hypotheses.
(N=46)

Database Number	Study Number	Author	Year	# Research Hypotheses	Percent	Cumulative Percent
7	1	Bin Batal	1998	39	2.43	2.43
2	2	Bornfield, Hall et al.	1997	4	0.25	2.68
7	3	Dobbs	1997	10	1.00	3.68
7	4	Cockrem	1996	3	0.19	3.87
7	5	Cummings	1994	45	2.80	6.67
7	6	DiCamilio	1994	36	2.24	8.91
7	7	Freed	1994	160	9.97	18.88
8	8	Frank & McKenzie	1993	3	0.19	19.07
6	9	McDow	1993	8	0.50	19.57
6	10	Beer & Beer	1992	15	0.93	20.50
7	11	Bloom	1992	30	1.87	22.37
7	12	Dannmeiler	1992	39	2.43	24.80
7	13	Oddo	1992	96	5.98	30.78
7	14	Ogden	1992	36	2.24	33.02
2	15	Strassmeier	1992	27	1.68	34.70
3	16	Eichinger, et al.	1991	12	0.75	35.45
7	17	Miller	1991	9	0.56	36.01
7	18	Sullivan	1991	15	0.93	36.94
8	19	Banks & Necco	1990	9	0.56	37.50
7	20	Chou	1990	27	1.68	39.18
2	21	Scmid, Shatz, & Walter	1990	9	0.56	39.74
2	22	Shea	1990	26	1.62	41.36
7	23	Swenson-Donegan	1990	3	0.19	41.55
7	24	Luddy	1989	9	0.56	42.11
7	25	Olsen	1988	3	0.19	42.30
7	26	Cadavid	1986	25	1.56	43.86
7	27	Cooper	1986	78	4.86	48.72
8	28	Fimian & Blanton	1986	14	0.88	49.60
7	29	Goodall	1986	137	8.54	58.14
7	30	Riffel	1986	216	13.46	71.60
7	31	Brightwell	1985	45	2.80	74.40
7	32	Dawson	1985	5	0.31	74.71
6	33	DePaepe, et al.	1985	8	0.50	75.21
7	34	Steinmiller	1985	3	0.19	75.40
6	35	Johnson, Gold, & Knepper	1984	3	0.19	75.59
6	36	McIntyre	1984	6	0.37	75.96
7	37	Reetz	1984	78	4.86	80.82
2	38	Beasley, et al.	1983	18	1.12	81.94
6	39	Beck & Gargiulo	1983	8	0.50	82.44
7	40	Carroll	1983	24	1.50	83.94
6	41	Jackson	1983	132	8.22	92.16
7	42	LaMonica	1983	24	1.50	93.66
7	43	Pipkin	1982	9	0.56	94.22
8	44	McIntyre	1981	54	3.36	97.58
7	45	Raison	1981	15	0.93	98.51
2	46	Zabel & Zabel	1981	30	1.87	100.38
Total				1605	100.38	100.38

Note. Total percentages are greater than 100 due to rounding

Research Hypotheses. In the 46 primary studies that provided sufficient information for quantitative synthesis, 898 distinct, non-overlapping research hypotheses which specified an expected relationship between distinct burnout constructs and distinct predictor constructs were investigated. Because many of the 898 distinct research hypotheses were investigated multiple times in one or more primary studies, a total of 1605 research hypotheses were ultimately investigated. Of the 1605 research hypotheses, thirteen occurred eight or more times in the primary studies synthesis population (see Table 5 for a complete listing of these research hypotheses).

Burnout Constructs. Of the total 1605 research hypotheses, 15 distinct burnout constructs were employed as criterion variables of interest (Table 3). Emotional exhaustion was the most frequently occurring burnout construct, accounting for 226 of the 1605 total burnout constructs (14.1%) and appearing in 27 of the 46 synthesis population primary studies (58.7%). Depersonalization also appeared in 27 of the 46 synthesis population primary studies (58.7%) and accounted for 209 of the 1605 total burnout constructs (13.0%). Personal accomplishment appeared in 26 of the 46 synthesis population primary studies (56.5%) and accounted for 209 of the 1605 total burnout constructs (12.8%). The Maslach Burnout Inventory was the most frequently occurring burnout measure, representing 1531 of the 1605 total burnout constructs (95.4%) and appearing in 43 of the 46 synthesis population primary studies (93.5%).

Reliability coefficients were reported for 1191 of the 1605 total burnout constructs (74.2%), and reported reliability coefficients ranged from 0.53 to 0.95. Validity coefficients were reported for a mere 39 of the 1605 total burnout constructs

Table 3
Distribution of Burnout Constructs in Synthesis Population
(N=1605)

Burnout Construct	No. Studies of Occurrence	Frequency of Occurrence	Percent
Emotional Exhaustion	27	226	14.10
Depersonalization	27	209	13.00
Personal Accomplishment	26	205	12.80
Emotional Exhaustion- Frequency	14	133	8.30
Emotional Exhaustion- Intensity	14	153	9.50
Depersonalization- Frequency	14	130	8.10
Depersonalization- Intensity	14	128	8.00
Personal Accomplishment- Frequency	13	127	7.90
Personal Accomplishment- Intensity	12	125	7.80
Burnout	9	137	8.50
Personal Involvement- Frequency	1	1	0.10
Personal Involvement- Intensity	1	1	0.10
Enthusiasm	2	10	0.60
Frustration	2	10	0.60
Alienation	2	10	0.60
Total		1605	100.00

(2.4%) in the synthesis population of primary studies. This obvious lack of validity information will be addressed in the recommendations.

Predictor Constructs. Target population characteristics or organizational behavior variables may serve as predictor constructs. This inquiry yielded 226 distinct predictor constructs from the 1605 research hypotheses. The most frequently occurring predictor construct was age, appearing 89 times and accounting for 5.5% of the total predictor constructs. Other predictor constructs that appeared 25 or more times in the primary study synthesis population include locus of control (25), caseload/number of students (45), gender (72), total years of experience (86), degree/level of education (69), role ambiguity (50), experience in special education (55), experience in current job (30), role expectation frequency (34), role overload (36), personal inadequacy (36), self role concept (35), and resource inadequacy (36). As these numbers indicate, the distribution between demographic and organizational predictor constructs was fairly even.

Reliability coefficients for predictor constructs were provided for only 11.5% (or 185 of 1605) of the predictor constructs Validity coefficients were provided for a mere 32 of the 1605 total predictor constructs (2.0%). A complete profile of all research hypotheses, burnout constructs, and predictor constructs can be found in Edmonson (2000).

Descriptive Analysis of Statistical Tests

Research questions 14-15 were used to guide the descriptive analysis of 1605 statistical tests corresponding to the 1605 research hypotheses studied in this inquiry. The answers to these research questions also fulfill the requirements laid out in the third research objective of this study.

Statistical Tests. Of the 1605 statistical tests used in this inquiry, 1427 utilized the Pearson product-moment correlation coefficient (88.9%);54 were point-biserial correlations between one continuous variable and one variable represented as a true dichotomy (3.4%); 36 were t statistics (2.2%), 63 were F statistics (3.9%), and 25 were unreported (1.6%). The unreported test statistics provided means, sample sizes, and standard deviations sufficient for deriving a correlation coefficient.

Effect Sizes. Effect size, according to Cohen (1988) refers to "the degree to which the phenomenon is present in the population" (p. 9). Stated conversely, an effect size means "the degree to which the null hypothesis is false" (p. 10). In statistical terms, then, the null hypothesis specifies that an effect size will be zero; likewise, the alternative hypothesis describes an effect size of any non-zero value, representing the degree to which said phenomenon is present within the population under study.[1]

Table 4 demonstrates the range of effect sizes describing relationships between burnout constructs and predictor constructs. The 1605 effect sizes ranged from the largest (in absolute value) of –0.99 to the largest positive value of 0.94.

Meta-Analyses of Selected Findings

Research questions 16-23 were used to guide the meta-analyses of 13 research hypotheses that yielded eight or more effect sizes and employed the same unit of

[1] Understanding the effect size described above is important for effective statistical inference. An effect size must be a pure or dimensionless number, meaning that it is not recorded according to any set unit of measurement. This dimensionless characteristic serves a dual purpose. First, a dimensionless effect size represents a standardized measure, rather than representing any one specific unit of measure. Second, a dimensionless effect size can be synthesized and/or cumulated across studies (Cohen, 1988).

The importance of this characteristic can be demonstrated with the use of a t-test for means. The difference between the means of two independent samples (m1 – m2), standardized by being divided by the within-population standard deviation (sp), can be represented by the effect size index (g). This relationship is demonstrated below:

$$g=(m1 - m2)/sp.$$

Because this equation generates a measure expressed in units of standard deviation, this measure can be synthesized and/or cumulated across studies.

The importance of an effect size representing a dimensionless measure can also be demonstrated through the Pearson product moment correlation, r. The Pearson r represents the strength of a relationship between two variables. It does not represent any type of units, such as points on a test score or dollars of an expenditure. Therefore, the effect size expressed with this statistic is again able to be synthesized and cumulated across studies.

In addition to being dimensionless, an effect size can also demonstrate practical significance. Practical significance implies that a relationship or difference is large enough to have meaning or be deemed important by the researcher (McNamara, 1994). Because an effect size represents the strength of a relationship between two variables, it therefore also has the capacity to demonstrate practical significance.

For example, an effect size represented by the Pearson product moment correlation can be squared (r2) to numerically represent the amount of variance in a criterion variable that is explained by the predictor variable. Thus, a Pearson r effect size of 0.5 generated for the relationship between burnout and experience means that in this study, experience accounts for 25% of the variance found in burnout. Whether such a statistic has practical significance depends on how important this finding is to the researcher and what implications it has for practice. Although effect sizes are often categorized as being small, moderate, or large (Cohen, 1988; McNamara, 1994), the actual practical significance of an effect size is highly individualized. What might be deemed a small effect size may have important educational implications and therefore might have great practical significance. Although statistical significance can be quite meaningful in a study, it does not in and of itself denote the presence or absence of practical significance. It is important, therefore, for a researcher to determine before conducting a study at what level the findings will be considered practically significant, regardless of whether results are statistically significant or not.

A third important characteristic of effect sizes is their ability to influence statistical power (Cohen, 1988; McNamara, 1994). A predetermined effect size, along with sample size, alpha level, and directionality of the alternative statistical hypothesis, can be used to develop a powerful study or to evaluate the power of a previously published study.

Table 4

Distribution of Reported or Derived Effect Sizes

(N= 1605)

Range of Effect Sizes	Frequency	Percent
-.99 to -.90	6	0.37
-.89 to -.80	2	0.12
-.79 to -.70	6	0.37
-.69 to -.60	9	0.56
-.59 to -.50	7	0.44
-.49 to -.40	29	1.81
-.39 to -.30	63	3.93
-.29 to -.20	116	7.23
-.19 to -.10	239	14.89
-.09 to -.01	262	16.32
0	31	1.93
.01 to .09	300	18.69
.10 to .19	209	13.02
.20 to .29	111	6.92
.30 to .39	73	4.55
.40 to .49	45	2.80
.50 to .59	36	2.24
.60 to .69	17	1.06
.70 to .79	21	1.31
.80 to .89	16	1.00
.90 to .99	7	0.44
All Effect Sizes	1605	100.00

analysis. The answers to these research questions also fulfill the requirements laid out in the fourth, fifth, and sixth research objectives of this study. Table 5 gives the findings for each research hypothesis for which a meta-analysis was conducted.

Table 5

Meta-Analytic Findings for 13 Research Hypotheses
with Eight or More Effect Size (ES) Estimates and the Same Unit of Analysis

Research Hypothesis	No. of ES Estimates	Population of ES [a]	Standard Deviation of ES	Percentage Of EV [b]
Emotional exhaustion related to experience[e]	12	-0.151[c]	0.113	2.270
Depersonalization related to experience	12	-0.081 [c]	0.063	0.658
Personal Accomplishment related to experience	12	-0.091	0.0	0.815
Emotional exhaustion related to age	10	-0.198 [c]	0.091	3.907
Depersonalization related to age	10	-0.106	0.000	1.119
Personal accomplishment related to age	10	-0.051	0.042	2.561
Intensity of emotional exhaustion related to age	8	-0.128	0.063	1.627
Intensity of emotional exhaustion related to experience	8	0.015	0.091	0.023
Intensity of personal accomplishment related to gender [d]	8	0.124	0.196	1.547
Frequency of emotional exhaustion related to age	8	-0.087	0.031	0.750
Intensity of depersonalization related to age	8	-0.128	0.000	1.627
Intensity of personal accomplishment related to age	8	0.055	0.062	0.298
Frequency of personal accomplishment related to age	8	0.033	0.105	0.110

Note: For replication purposes see Edmonson (2000).
a. Population effect sizes are in the form of Pearson product moment correlations corrected for sampling error (Hunter & Schmidt, 1990).
b. Percentage of explained variances is derived by squaring the effect size and multiplying by 100.
c. Moderator variable analysis is thoroughly explained in Hunter & Schmidt (1990) and Edmonson (2000).
d. This effect size was derived from point-biserial correlation coefficients, with group membership defined as one equals male and two equals female. Accordingly, a positive effect size implies greater intensity of personal accomplishment for females than males.
e. Experience is operationalized as the total number of years an individual has worked in education.

The thirteen research hypotheses for which meta-analyses were run each provided twelve or fewer effect sizes. For this reason, the results of these meta-analyses should be

interpreted with care. Hunter and Schmidt (1990) caution against second-order sampling error in meta-analyses with a small number of study correlations; second-order sampling error is essentially sampling error in meta-analyses caused by using a small number of studies drawn from an entire population of primary studies addressing a distinct research hypothesis. However, because this review of primary studies was exhaustive, second-order sampling error should not be a problem.

Even considering the chance of second-order sampling error, interesting parallels can be drawn between the findings of the meta-analyses of the most frequently occurring research hypotheses and the relationships described in the theoretical framework of this inquiry. For example, small to negligible negative mean correlations were found for the relationships between the burnout constructs of emotional exhaustion, depersonalization, and personal accomplishment and the predictor construct experience. These results support the findings described by several researchers (Crane & Iwanicki, 1986; Freed, 1994; McIntyre, 1983; Zabel & Zabel, 1983). Based on these findings, although experience does not explain a great deal of the variance in burnout constructs, burnout does tend to decrease as experience increases.

Another predictor construct found in several of the most frequently occurring research hypotheses was age. Small, negative relationships between age and the burnout constructs of emotional exhaustion and depersonalization were expressed in the research of several authors (Banks & Necco, 1990; Crane & Iwanicki, 1986; Gold, 1989; Harmon-Vaught, 1985; McIntyre, 1983). These results were mirrored in the findings of the meta-analyses of the most frequently occurring research hypotheses. These findings agree that emotional exhaustion and depersonalization decrease as age increases. Personal

accomplishment, however, moves in the opposite direction according to age. Again, however, small correlations indicate that age does not explain a great deal of the variance in burnout constructs. Harmon-Vaught (1985), McIntyre (1983), and Zabel and Zabel (1981) all determined that personal accomplishment increased in older teachers, and the results of this meta-analysis support those determinations with extremely small but positive correlations.

The relationships described above, describing burnout constructs as they relate to age and experience, could have important implications for educator (both teacher and administrator) preparation programs. If younger and less experienced teachers experience more frequent and more intense feelings of emotional exhaustion and depersonalization, as these data suggest, perhaps there are some needs in educator preparation programs that are not being met. Do new special educators come into their profession without adequate skills or with unrealistic expectations? The reasons behind the inverse relationships found between the burnout constructs of emotional exhaustion and depersonalization and the predictor constructs of age and experience deserve further investigation.

RECOMMENDATIONS

Implications for Research Measurement Standards

Several recommendations gleaned from this quantitative synthesis should be made regarding research measurement standards. These recommendations are made with the intent of increasing the utility of current research on special educator burnout. Several of these recommendations coincide in part with those of Thompson's (1997) study of job satisfaction in the first 26 volumes of the *Education Administration*

Quarterly. Because Thompson's study was limited to only one publication and investigated job satisfaction rather than burnout, obviously the recommendations offered by this study differ in a number of ways.

Construct Operationalization. The operationalization of constructs is, at best, inconsistent and should be pursued much more stringently in the research. Burnout, for example, is defined in a number of ways. Some authors describe burnout is as a form of job stress (Cherniss, 1988; Dedrick & Raschke, 1990; Maslach, 1982; Wisniewski & Gargiulo, 1997). Others describe burnout as a reaction to stress (Greer & Greer, 1992) or as a number of physiological and psychological symptoms (Gold, 1989; Guglielmi & Tatrow, 1990; Hudson & Meagher, 1983). Experience is another example of an ill-defined construct; some authors use experience to refer to a person's tenure in his or her current position; others use experience to mean a person's total number of years in education. More clearly defined operationalization of constructs would increase the validity and reliability of all research, particularly research using meta-analysis and/or techniques of quantitative synthesis.

Data reporting standards. As stated previously, only 20% of the primary studies addressing burnout among special educators contained quantitative findings sufficient for quantitative synthesis. In fact, only 37% of the studies reporting quantitative findings contained data sufficient for quantitative synthesis (46 of 123 primary studies). The number of quantitative studies providing insufficient data for synthesis demonstrates an obvious weakness in data reporting standards in current research publications. For correlation and multiple regression studies, Hunter and Schmidt (1990) suggest that sample sizes, means, standard deviations, reliability information, validity information,

and zero-order correlation matrices for all variables be reported. Furthermore, Thompson (1997) suggests that the measures and response scales used by researchers be published along with any primary study; such information would inform researchers of reverse scored measures and allow for necessary adjustments in the sign of correlations. For example, personal accomplishment as a construct of burnout is often measured as "reduced personal accomplishment" rather than personal accomplishment; when measured as reduced personal accomplishment, the sign of any correlation coefficients would be reversed from measures indicating personal accomplishment. In order to effectively cumulate data across studies, these measures must be identical in direction.

Indicators of explained variance. The coefficient of determination is used to describe the amount of explained variance in a study (McNamara, 1991). The amount of explained variance can therefore be used as an indicator of practical significance: a large amount of explained variance indicates practically significant findings, whereas a small amount of explained variance – meaning that a large amount of variance is unexplained by the variable being studied – would indicate low practical significance. Indicating the amount of explained variance in a study, then, would be beneficial to understanding the practical significance of research findings.

Study of administrators. The study of burnout among special educators should include special education administrators. Of the 1605 effect sizes reported or derived in this inquiry, only 23.6% dealt with the target population of administrators (i.e. special education directors). Likewise, only five of the 46 primary studies, or 10.87%, presented findings for special education directors. Because of the importance of administrators in special education, this lack of research regarding this target population should be

addressed. The study of burnout among special education administrators should be of primary concern for future research studies, so that a greater understanding of this facet of educational administration can occur.

Study of other special education professionals. A number of special education professionals were overlooked in the research addressing burnout among special educators. Of the 1605 effect sizes, 15 (0.9%) were reported for school psychologists; 27 (1.7%) were reported for generic special educators from multiple categories that included therapists who worked in special education (speech therapists, physical therapists, occupational therapists). No primary studies were found that addressed burnout among special education diagnosticians, although these professionals play a very large and important part of special education. The lack of research addressing special education professionals other than teachers and administrators should clearly be addressed.

Advancing Knowledge Regarding Burnout among Special Educators

This quantitative synthesis of research addressing burnout among special educators fulfilled three important advantages. First, it synthesized existing quantitative research on burnout among special educators by cumulating research findings on burnout constructs. Second, this inquiry extended knowledge of burnout among special educators. This extension took place through a number of processes: the identification and evaluation of burnout constructs; the meta-analysis of frequently occurring burnout constructs, which indicated the direction and magnitude of these burnout constructs to a number predictor constructs; the analysis of moderator variables that played a role in the relationship between burnout constructs and predictor constructs. The third advantage of this inquiry is its ability to serve as a model for future quantitative synthesis of

organizational variables. This inquiry, its processes, and its findings were all found to be both valid and reliable, and they offer a sound model for conducting additional meta-analytic studies.

Examination of the effects of non-demographic variables. Due to the enormity of research hypotheses that appeared multiple times in one or more primary studies, meta-analyses were conducted only for those research hypotheses occurring eight or more times in the synthesis population. As can be seen from these meta-analyses, demographic variables such as experience and age are generally weak predictors of burnout. However, a closer look at the complete data set of large positive and negative effect sizes reveals that organizational and behavioral variables, such as role conflict and ambiguity, predict much more of the variation in burnout. Relationships between burnout constructs and organizational/behavioral variables occurred numerous times in the research (see Edmonson, 2000, for complete findings), even though no meta-analyses of these relationships were conducted in this inquiry; many of these relationships were represented by large effect sizes, both positive and negative. Thus, future research should include careful study of the relationship between burnout and non-demographic variables. By breaking down the existing data into numerous smaller studies utilizing specific subsets of variables, a more detailed and in-depth understanding of burnout and its correlates can occur.

Disaggregation of data by source. Because this study looked at primary studies from eight major databases and a previous meta-analysis, the findings included research from journal articles, dissertations, books, and documents. Breaking the information down according to type of study might be useful to determine what in what form the

majority of burnout studies are published. Furthermore, primary studies that come from journal articles can be broken down to determine which journals, if any, publish the greatest number of articles on burnout. In addition, this type of analysis could be used to determine if there is a "journal effect," a "database effect," or an "author effect" present among primary studies addressing special educator burnout. Once analyses have been conducted based on findings disaggregated by type of study or journal, quantitative syntheses could be conducted in order to compare and contrast these findings. Similarities and differences could be noted between primary studies that occur in a particular journal or are published through a certain media. Furthermore, these additional studies should include analyses of research hypotheses, burnout constructs, predictor constructs, measurement instruments, and moderator variables. In this manner, a more complete and thorough understanding of research addressing burnout among special educators could occur.

APPENDIX A

Research Objectives and Research Questions

Research Objective One: Identifying all primary studies that address burnout among special educators and provide sufficient information for quantitative synthesis

Historical Overview

1. How many primary studies in the databases (ERIC, Dissertation Abstracts International, Wilson, PsycInfo, Social Sciences Abstracts, Article First, Education Abstracts, Educational Administration Abstracts) addressed burnout among special educators?

2. How many of these primary studies addressing burnout among special educators presented empirical findings?

3. How many of the primary studies presenting empirical data on special educators and burnout provided sufficient information for quantitative synthesis?

Research Objective Two: Specifying the research hypotheses for each primary study, along with the target population, burnout constructs, and predictor constructs used in the development of these hypotheses.

Target Population

4. In each primary study, what was the identified target population (teachers, administrators, diagnosticians, etc.)?

5. What were the identifiable characteristics of the target population for each primary study?

6. What unit of statistical analysis was specified in each primary study?

Research Hypotheses

7. How many burnout research hypotheses were investigated for each primary study?

Burnout Constructs

8. What burnout constructs were elaborated in the research hypotheses in each primary study?

9. What reliability information for burnout constructs was provided in each primary study?

10. What validity information for burnout constructs was provided in each primary study?

Predictor Constructs

11. What specific predictor constructs were elaborated in the research hypotheses for each primary study?

12. What reliability information for predictor constructs was provided in each primary study?

13. What validity information for predictor constructs was provided in each primary study?

Research Objective Three: Identifying the statistical hypotheses and the inferential rules used to synthesize the data found in each research hypothesis

Statistical Tests

14. What specific test statistic was reported for each research hypothesis?

15. What specific effect size indicator was reported or could be derived for each test statistic?

Research Objective Four: Estimating the population effect sizes for each research hypothesis

Effect Sizes

16. What was the estimate of the true population effect size?

17. What was the estimate of the value of the variance of the observed (or derived) effect sizes?

18. What was the estimate of the variance due to sampling error?

19. What was the estimate of the variance of the true population effect size?

20. What was the estimate of the standard deviation of the true population effect size?

Research Objective Five: Identifying the moderator variables relative to each research hypothesis

Moderator Variables

21. What moderator variables, if any, were associated with the burnout research hypothesis under analysis?

Research Objective Six: Exploring the stability of each population effect size over time

Time Series Analysis

22. How have effect sizes for research hypotheses found in primary studies on burnout among special educators changed over time?
23. How have effect sizes for target populations of primary studies on burnout among special educators changed over time?

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