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The Impact of Psychological Autopsies on Medical Examiners' Determination of Manner of Death

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ABSTRACT: This study evaluated the impact of psychological information on medical examiners' determination of manner of death in equivocal cases. Ten cases, a typical and equivocal case for each of five case types (single car, child, autoerotic, psychotic, and Russian roulette death) were evaluated for manner of death by 195 medical examiner subjects. From this sample 95 control subjects received 10 cases made up of physical and circumstantial evidence, while 100 experimental subjects received the same 10 cases expanded with brief psychological autopsies. Psychological information was shown to have a statistically significant impact on subjects' determination (and certainty) of manner of death in equivocal cases and even in some typical cases.

KEYWORDS: pathology and biology, psychiatry, death, postmortem examinations, psychological autopsy, manner of death, equivocal death, single-car death, childhood death, autoerotic death, psychotic death, Russian roulette death

A central function of medical examiners is to certify fatalities as natural, accidental, suicidal, homicidal, or undetermined. Medicolegal certification of these manners of death is straightforward with "typical" cases, while complex and difficult with "equivocal" cases (for example, a case that might be either an accident or a suicide).

The medical examiner's responsibility for certifying manner of death has important social, legal, economic, medical, and research implications. Berman³ notes that for determination of criminal liability, payment of insurance benefits, and establishment of public health records, it is critical that medical examiners and coroners maximize correct classifications of manner of death. In recent years, investigators have expressed great concern about inaccuracies in the certifications of death, and suicide death in particular [1-6].

Sainsbury and Barraclough [7] note that social researchers often base theories on officially reported suicide statistics, assuming the data to be accurate. However, even carefully generated mortality statistics can have questionable reliability and validity [8]. For example, Datel's research on two independent data recording systems in the United States Army showed

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major discrepancies [1]. In this study, two separate systems, collecting data from the same army population, showed only 63.5% commonality between the two mortality lists.

The sources of variability in mortality statistics are numerous. Swenson [9] reviewed certification procedures in the United States noting confusion concerning equivocal cases, inaccurate recording procedures, and inadequate concepts of suicide. Despite sophisticated forensic technology, many nonnatural deaths go undetected, because of an investigator's lack of suspicion [10, 11]. Willingness to certify a death as a suicide varies greatly among officials [12]. In general, most equivocal deaths are considered accidents until proven to be suicides [13].

While investigating cases of equivocal suicide, Litman et al [14] found that some authorities certify suicide only when a handwritten note is present. In addition, extensive variation in the amount of information sought and considered by the medical examiner has been found. For example, in equivocal cases of self-inflicted gunshot wounds, police investigators may lose interest in a case once homicide appears unlikely. In sample cases of possible suicide by gunshot wound, Litman [15] found that 25% of police reports had little informational value concerning the decedent's intention to die.

Improvements in the reliability and validity of mortality statistics might logically begin with officials making more accurate medicolegal decisions. In the United States, those officials "qualified" to determine manner of death differ extensively in expertise and official title—from medical examiners, to coroners, to sheriffs, to lay people [5, 16].

The present study focuses on medical examiners, the most highly trained and qualified group. Medical examiners' manner of death evaluations for five case types (single car, child, autoerotic, psychotic, and Russian roulette death) were investigated. It was hypothesized that psychological information, in the form of brief psychological autopsies, would significantly affect certifications in equivocal cases.

Psychological autopsies are used to help ascertain responsibility in cases of equivocal death. An attempt is made to determine the victim's psychological intent by reconstructing the decedent's final days' behavior and communication in addition to history, personal habits, personality traits, and character. Behavioral science investigators develop a psychological profile through interviews with family, friends, co-workers, physicians, and others who are able to provide relevant information about the lifestyle of the deceased [17]. Weisman [18] states that psychological autopsies are similar to physical autopsies in that they investigate the antecedents of death, revealing the decedents' contribution to their own demise. In spite of the speculative element, Hibler⁴ believes psychological autopsies have a functional use in equivocal cases with otherwise limited information. In these instances, psychological autopsies help to form an understanding of the death from physical evidence, documented life events, and intangible psychological factors.

The formal psychological autopsy technique developed by Litman et al has been available since the early 1960s [14]. Those who support the use of the technique (such as suicidologists) have, for the most part, presumed that the technique is effective in the determination of manner of death in equivocal cases. But perhaps this assumption is unfounded because the formal technique has been used very little since its inception over two decades ago. The authors were only able to find two jurisdictions in the United States where a regular contract for conducting psychological autopsies is maintained.

One possible reason for the relatively infrequent use of the technique might involve the limited training and exposure medicolegal officials receive in the psychological aspects of equivocal death. As politically appointed officials, most coroners have little, if any, medical or psychological background. Medical examiners, as medical doctors, receive most of their training in pathology and forensic science techniques with little formal training in psychological aspects of death.

⁴N. S. Hibler, *The Psychological Autopsy*, unpublished manuscript, 1978.

If there is a link between the infrequent use of psychological autopsies and the limited contact of medicolegal officials with the psychological antecedents of equivocal death, then an empirical study that investigates the potential impact of psychological information on the determination of manner of death might be a useful contribution. Empirical support for the presumed significance of psychological information on manner of death determinations in equivocal cases is imperative if the psychological autopsy technique is to gain increased use and acceptance.

In the present study, medical examiners serving as subjects reviewed either "typical" or "equivocal" cases of death, with or without psychological autopsies, and certified each case as to manner of death. Pilot studies were conducted to establish systematically both "typical" and "equivocal" cases. Typical cases were those cases where manner of death was not difficult to certify. It was thought that subjects receiving psychological autopsies with typical cases would show virtually the same responses as those not receiving psychological information because such data would offer little value to cases that were, by definition, relatively obvious. Equivocal cases were used to determine the impact of psychological autopsies on changing responses between control and experimental subjects.

Method and Materials

Design

A $2 \times 2 \times 5$ factorial design was used: 2 (nature of case: typical, equivocal) \times 2 (information: medical/circumstantial, medical/circumstantial/psychological) \times 5 (case type: single car, child, autoerotic, psychotic, and Russian roulette death). Nature and type of case were within subject variables while information was the between-subject variable. The dependent measure was manner of death certification for each case.

Subjects

Subjects were 195 medical examiners drawn from a sample population of 400 practicing examiners in the United States. These subjects were randomly selected from the membership roster of the National Association of Medical Examiners. As members of this association all subjects were medical doctors who specialize in medicolegal evaluation of death.

Cases

There were two fixed factors in this study: nature of the case (typical and equivocal) and specific case type (the five case types cited above). All case descriptions were factual and based on cases obtained from the files of the Armed Forces Institute of Pathology and the Los Angeles Suicide Prevention Center.

Determination of the nature of each case (typical or equivocal) was established through pilot studies where medical examiner subjects evaluated the medical, physical, and circumstantial evidence presented in a variety of cases. A Chi-square "goodness of fit" analysis was used to establish statistically the nature of the cases.

For a case to be operationally defined as "typical," at least 80% of the pilot subjects were required to agree on one of three manner of death choices (suicide, accident, or undetermined). In the typical single car case, for example, 100% of the pilot subjects identified accident as the appropriate manner of death. Chi-square values in typical cases were required to reach a predetermined level of significance ($P < 0.01$).

For a case to be operationally defined as "equivocal," pilot subjects' manner of death determinations were required to be distributed among accident, suicide, and undetermined certifications without significant differences. No one choice was permitted to exceed 60% agree-

ment. In the equivocal psychotic case, for example, 43% of the pilot subjects identified the case as accident, 31% chose suicide, and 25% selected undetermined as the manner of death. Chi-square values for equivocal cases were required to be statistically nonsignificant.

The following are brief descriptions of the ten experimental cases used in this study:

1. Single-car death—typical: A female decedent lost control of her car on a mountain road. The car's brake lights were seen to flash twice prior to hitting a hillside. Toxicological analysis revealed 0.21% alcohol in the blood.

2. Single-car death—equivocal: A male decedent collided head-on with a truck. The incident occurred late at night on a winding road. The victim's car swerved into the path of the oncoming truck. A few short skid marks left by the decedent's car were apparent.

3. Child death—typical: A young male ran in front of an oncoming car. The boy had been playing in his front yard. The driver claimed the decedent ran into the road without looking.

4. Child death—equivocal: A six-year-old girl overdosed on diphenhydramine. A shoe box under the child's bed was found filled with prescription medication. The mother reported the child had watched a television show about teenage suicide the previous night.

5. Autoerotic death—typical: A young man died from inhalation of auto exhaust. The victim was participating in autoerotic behavior in his van, which was parked in an enclosed garage with the motor running. The heater was set on high; the temperature outdoors was below freezing.

6. Autoerotic death—equivocal: A naked man was found hanged in a room containing sexual paraphernalia and literature. Notes written in the decedent's hand which vaguely implied suicidal ideation were found in the room.

7. Psychotic death—typical: A 35-year-old male psychiatric patient was found dead by hanging. The victim's diagnosis was paranoid schizophrenia. The decedent had made a ligature from a hospital gown.

8. Psychotic death—equivocal: A male decedent was mauled to death by lions at a zoo. The victim had scaled a fence and crossed a water-filled moat to get into the lion compound. A witness claimed the decedent had said that he wanted to "play with" the animals.

9. Russian roulette death—typical: A male died by a self-inflicted gunshot wound to the head while playing Russian roulette at a camp site. The decedent made five separate chamber spins and trigger pulls before fatally wounding himself on his sixth trial.

10. Russian roulette death—equivocal: At a dinner party a male incurred a fatal wound to the head. The decedent had a blood alcohol content of 0.25%. Boasting to his friends, the victim wanted to show "how well he knew his weapon" when the fatal incident occurred.

Psychological Autopsies

Psychological autopsies used in the study were standardized to provide similar information in all cases. These included the decedent's demographics, lifestyle, personality features, and a psychological interpretation (account) of the death.

Procedure

Research materials were mailed to the prospective sample population. Subjects first read a cover letter describing the study and were then asked to read an ethical statement assuring anonymity and confidentiality.

A research questionnaire was then completed, after which subjects assigned manner of death determinations and rated their certainty as to their manner of death choices for the ten brief cases. After completing the case evaluations, subjects were required to enclose and mail all materials in an addressed stamped envelope provided in the research packet.

Results

From the original mailing of 400 research packets, almost 50% responded (195 medical examiners in all). This sample, obtained from virtually every state in the continental United States, represents a large and diverse group of practicing medical examiners. The typical respondent was a male medical examiner, employed full time for over ten years as a pathologist or forensic pathologist, in a medical examiner system. Twenty-one percent of the subjects identified their official title as "coroner."

To analyze the impact of psychological autopsies on manner of death determination, Chi-square analyses were performed on the data for each typical and equivocal case type.

As expected, the psychological autopsy made no significant difference ($P < 0.05$) in the manner of death certifications between control and experimental subjects in the typical single car, child, and autoerotic cases (Table 1). Unexpectedly, the psychological autopsy did produce significant differences between groups in the typical psychotic and Russian roulette cases.

As predicted, psychological information had a significant impact on manner of death determination in equivocal cases of single-car, child, autoerotic, and psychotic death. There was no significant effect in the equivocal Russian roulette case, but a nonsignificant trend was evident.

Kendall's Tau-B was used to analyze certainty ratings that accompanied each case evaluation. A significant correlation ($P < 0.05$) was found between the inclusion of psychological information and rating certainty for five of ten cases.

Discussion

As seen in Figs. 1 through 5, the inclusion of psychological information had a significant impact on determinations of manner of death in four of five equivocal case types where medical, physical, and circumstantial data were insufficient to make a clear certification. Tendencies to have preestablished response biases for some case types were revealed as well.

1. Single-car death: All but one subject agreed that the typical single car case should be certified as accidental death. The inclusion of psychological information in this case was consistent with this finding. Therefore, as expected, there was no statistically significant difference in manner of death certifications between control and experimental conditions.

In contrast, there was a statistically significant difference between group certifications in the equivocal case. Control subjects (those not receiving psychological information) were about evenly divided in their determinations of accident, suicide, and undetermined as the manner of death in this case. The psychological autopsy added that the decedent had a depressed affect, anxiety attacks, and recent losses. Subsequently, subjects receiving this information (experimental group) made significantly more suicide certifications than did control subjects. The psychological autopsy shifted the certification of manner of death in almost 90% of those receiving this additional information.

2. Child death: As in the previous case, there was no significant difference between conditions in the typical case (that is, the psychological information only confirmed what appeared unequivocally to be an accident).

However, in the equivocal case almost two thirds of the control subjects (without the use of psychological information) certified the manner of death as either accident or undetermined. With the addition of important psychological information about the child-victim's bizarre obsession with death, her history of depression, and her past tendency to act out impulsively, experimental subjects showed a significantly higher number of suicide certifications than control subjects. In this equivocal case the psychological autopsy offered salient information that normally would not be reported in a mere site investigation.

3. Autoerotic death: In general, typical cases of autoerotic death are viewed as accidents.

TABLE 1—Percent responses of manner of death.

Case/Experimental Condition	Freq.	Percent	Case/Experimental Condition	Freq.	Percent
(1a) SCT/no psych autopsy			(6a) AEE/no psych autopsy		
Accident	96	100.00	Accident	36	39.56
Suicide	0	0.00	Suicide	33	36.26
Undetermined	0	0.00	Undetermined	22	24.18
(1b) SCT/psych autopsy			(6b) AEE/psych autopsy		
Accident	96	98.97	Accident	11	11.00
Suicide	1	1.03	Suicide	75 ^a	75.00
Undetermined	0	0.00	Undetermined	14	14.00
(2a) SCE/no psych autopsy			(7a) PDT/no psych autopsy		
Accident	31	32.63	Accident	7	7.37
Suicide	37	38.95	Suicide	85	89.47
Undetermined	27	28.42	Undetermined	3	3.16
(2b) SCE/no psych autopsy			(7b) PDT/psych autopsy		
Accident	6	6.00	Accident	0	0.00
Suicide	88 ^a	88.00	Suicide	99 ^b	100.00
Undetermined	6	6.00	Undetermined	0	0.00
(3a) CDT/no psych autopsy			(8a) PDE/no psych autopsy		
Accident	93	96.88	Accident	35	36.84
Suicide	0	0.00	Suicide	27	28.42
Undetermined	3	3.13	Undetermined	33	34.74
(3b) CDT/no psych autopsy			(8b) PDE/psych autopsy		
Accident	98	98.99	Accident	67 ^a	69.07
Suicide	1	1.01	Suicide	16	16.49
Undetermined	0	0.00	Undetermined	14	14.43
(4a) CDE/no psych autopsy			(9a) RRT/no psych autopsy		
Accident	38	40.86	Accident	21	22.11
Suicide	33	35.48	Suicide	68	71.58
Undetermined	22	23.86	Undetermined	6	6.32
(4b) CDE/no psych autopsy			(9b) RRT/psych autopsy		
Accident	6	6.19	Accident	9	9.00
Suicide	84 ^a	86.60	Suicide	86 ^c	86.00
Undetermined	7	7.22	Undetermined	5	5.00
(5a) AET/no psych autopsy			(10a) RRE/no psych autopsy		
Accident	83	87.37	Accident	62	64.58
Suicide	6	6.32	Suicide	26	27.08
Undetermined	6	6.32	Undetermined	8	8.33
(5b) AET/no psych autopsy			(10b) RRE/psych autopsy		
Accident	86	86.00	Accident	76	76.77
Suicide	7	7.00	Suicide	15	15.15
Undetermined	7	7.00	Undetermined	8	8.08

^aP < 0.0001.

^bP < 0.01.

^cP < 0.05.

Cases:

- SCT = single-car typical
- SCE = single-car equivocal
- CDT = child death typical
- CDE = child death equivocal
- AET = autoerotic typical

- AEE = autoerotic equivocal
- PDT = psychotic death typical
- PDE = psychotic death equivocal
- RRT = Russian roulette typical
- RRE = Russian roulette equivocal

Experimental condition:

- no psych autopsy = cases only (control group)
- psych autopsy = cases + psychological autopsies (experimental group)

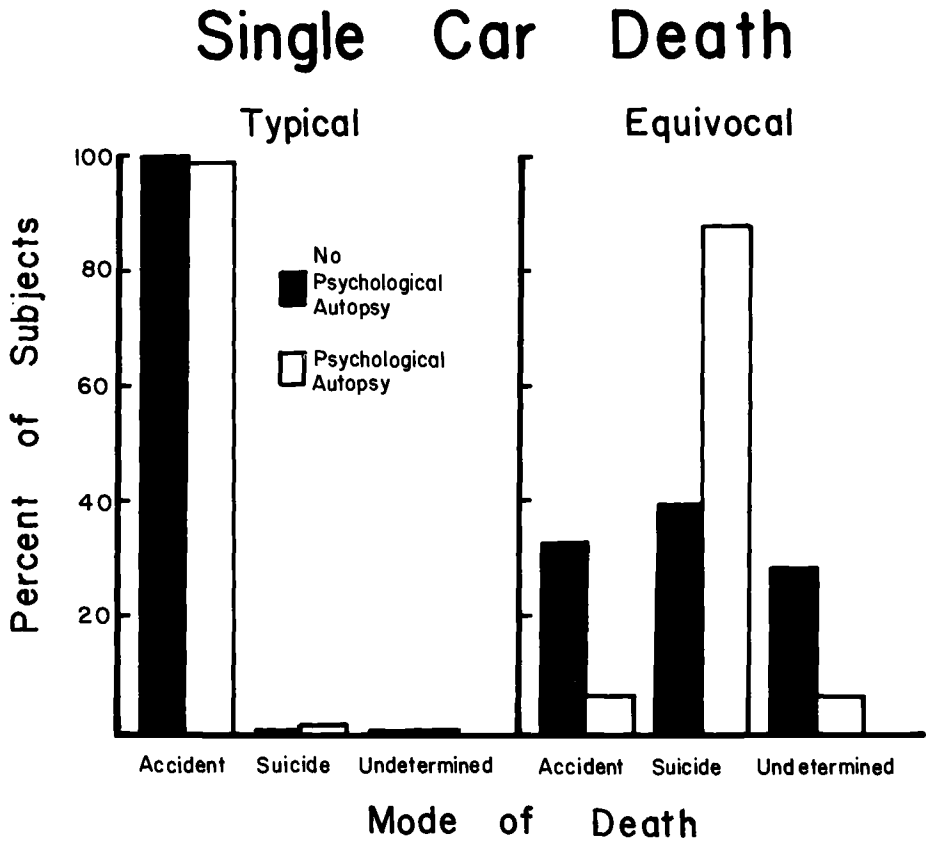


FIG. 1—The impact of psychological autopsies on manner of death determination for typical and equivocal cases of single-car death.

The addition of psychological information to the typical case in this study did not alter this preferred manner of death determination.

On the other hand, the equivocal autoerotic death, defined by the presence of notes in the decedent's hand which implied suicidal ideation, about equally split determinations of manner of death which were based only on scene investigation data. For experimental subjects the psychological autopsy revealed a history of depression, substance abuse, and vague suicidal ideation before the incident. These subjects showed a significant shift towards suicidal death once this psychological information was presented.

4. Psychotic death: For the typical psychotic case most of the control subjects identified suicide as the manner of death. In the experimental condition, the psychological autopsy produced a unanimous response of suicide for this case. As established in the pilot study, the manner of death in this typical case was thought to be relatively straightforward. However, ten respondents did not agree that suicide was the proper determination of manner of death. Here, then, we can see the unexpected impact of the psychological autopsy. The information therein discussed the victim's history of schizophrenia, his multiple psychotic breaks, and his previous suicidal behavior. Surprisingly, this psychological information significantly influenced certifications between groups in what was presumed to be a rather obvious (typical) case.

In the equivocal psychotic case control subjects were about evenly divided in their determination of manner of death between accident, suicide, and undetermined. In the experimen-

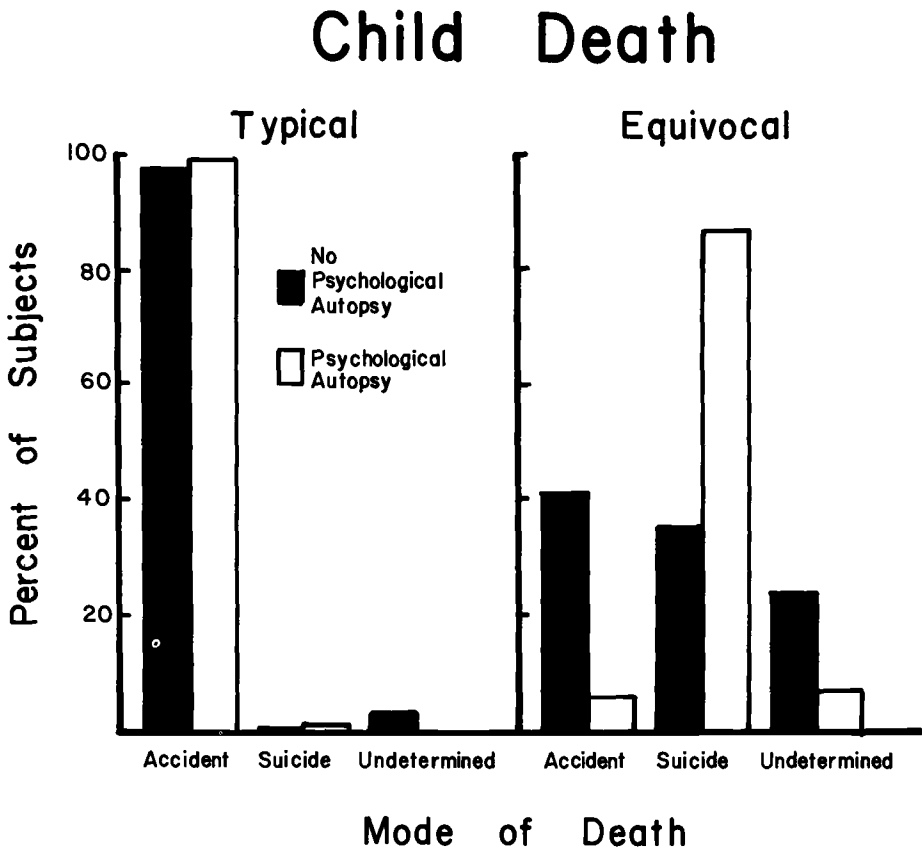


FIG. 2—The impact of psychological autopsies on manner of death determination for typical and equivocal cases of child death.

tal group, subjects learned from the psychological autopsy that the deceased suffered from psychotic delusions and hallucinations, whereby he felt that he could communicate with and tame lions. This crucial psychological information produced a significantly higher number of certifications of accident among experimental subjects.

5. Russian roulette: Similar to the psychotic case type, the Russian roulette cases produced some unexpected results. The typical case, as established in the pilot study, was thought to be unquestionably suicidal. Here the decedent pulled the trigger six times, creating a 0.67 objective probability of encountering death. In spite of this, almost one in three subjects did not believe that this death should be certified as a suicide. Only with the addition of the psychological autopsy did a significant shift towards a suicide determination occur. The psychological autopsy revealed to experimental subjects that the decedent was depressed, had health problems, was out of work, and had talked about suicide on previous occasions. However, there remained a surprisingly strong bias against calling this case a suicide even with corroborative psychological information. Despite psychological information that clearly described the decedent's suicidal orientation, 14% of the experimental subjects still certified this typical Russian roulette case as an accident or undetermined.

This bias was again evident in the equivocal Russian roulette case. This case, established in the pilot study as equivocal, was identified as an accident by 62% of the control subjects (suicide was the anticipated preferred response). This was the only equivocal case in which the psy-

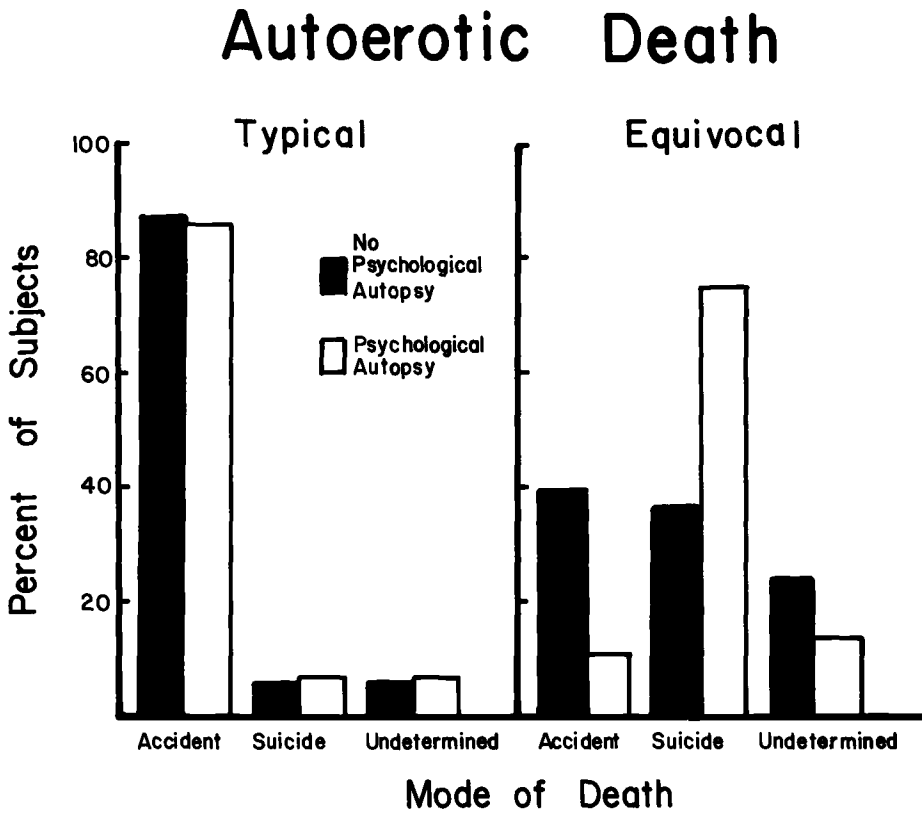


FIG. 3—The impact of psychological autopsies on manner of death determination for typical and equivocal cases of autoerotic death.

chological autopsy had a statistically nonsignificant effect (although a nonsignificant trend was evident).

The unexpected results from the psychotic and Russian roulette case types are noteworthy. They may provide some empirical evidence of a reluctance among some medicolegal officials to select suicide as the manner of death for any case of these types. Of the five case types that appeared in the study, psychotic and Russian roulette were the only two types in which suicide was the anticipated response in both typical and equivocal cases.

The experimental impact of psychological information on subjects' determination of manner of death was seen in both typical and equivocal psychotic and Russian roulette cases (statistically significant in three cases with a nonsignificant trend in the fourth). It was a central contention in this study that psychological information is valuable in the evaluation of equivocal cases. However, as shown by the data for these two case types, psychological information can even cause a significant impact on those cases that were originally thought to be relatively straightforward (especially in cases where suicide may be the actual manner of choice).

It may be argued, validly, that adding any sort of information, psychological or otherwise, will in some way affect subsequent evaluations of any case. This "information effect" was not specifically controlled in our study. However, it is evident that more in-depth investigation leads to more valid and more certain determinations of manner of death.

The data in this study strongly suggest that additional information (herein of a psychological nature) had a significant impact on manner of death determinations. Although an analog

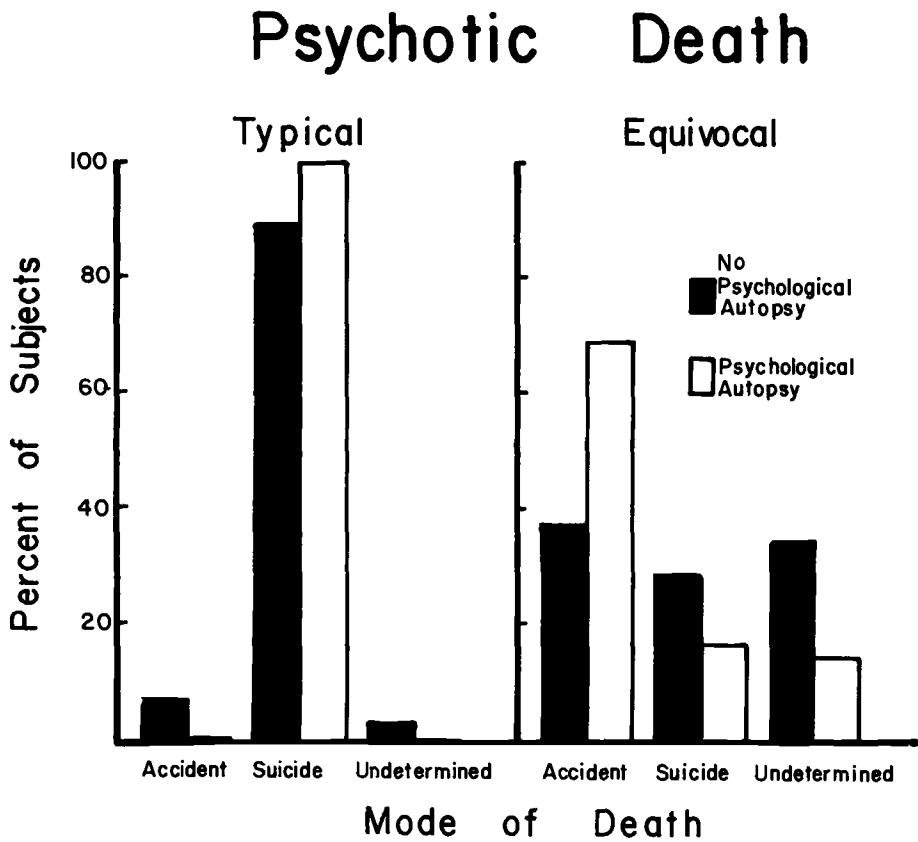


FIG. 4—The impact of psychological autopsies on manner of death determination for typical and equivocal cases of psychotic death.

study, it is important to add that these cases were real—adapted from medical examiners’ files. For practical purposes the experimental “psychological autopsies” were necessarily shorter than actual reports, but they were in fact based on the formal format and contained a concise amount of pertinent psychological information (the informal use of psychological information was not specifically addressed in the study). Furthermore, the large sample population that produced the significant experimental findings was made up of practicing medical examiners who evaluate these types of cases on a regular basis.

In everyday practice, medical examiners (as medical doctors and forensic science specialists) investigate cases primarily using medical, physical, and circumstantial evidence. Psychological evidence is not particularly emphasized as a factor in the standard medical examiner’s investigation of equivocal death [19].

In ideal practice, a medical examiner would employ a behavioral scientist who specializes in the psychological study of equivocal death. After collecting relevant psychological information, the behavioral scientist would submit a written report, the psychological autopsy. The medical examiner, or a mode conference team, would then determine manner of death based on medical, physical, and psychological evidence. This procedure has long proved effective in practice, for example, in Los Angeles county [17].

This study was designed to test the impact of added psychological investigation. Had results indicated no shift in manner of death determination, the everyday practice of medical exami-

Russian Roulette

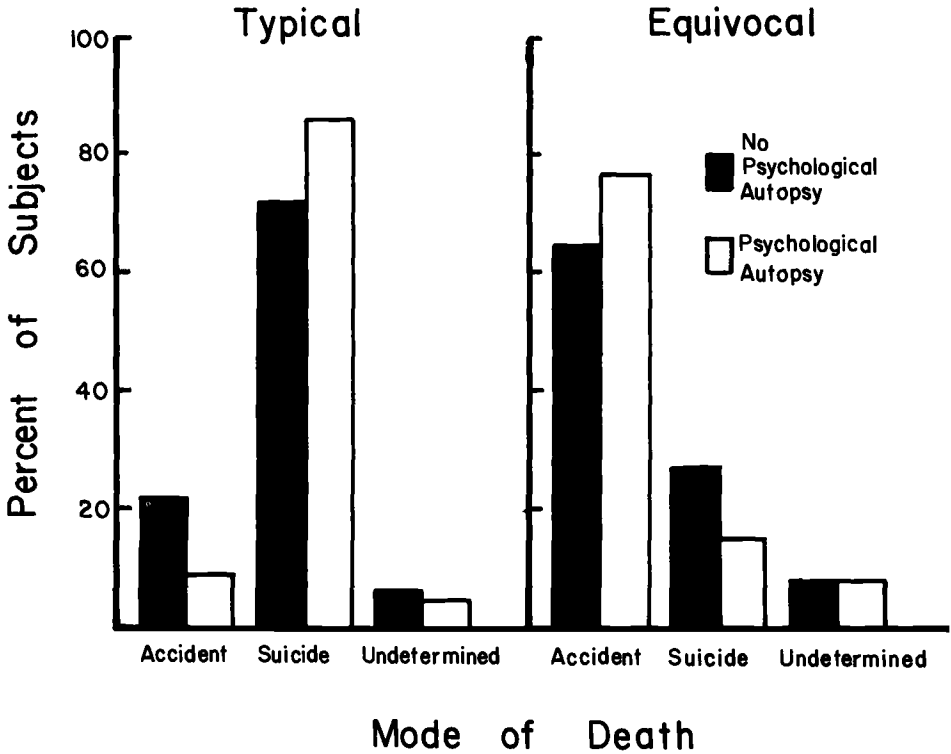


FIG. 5—The impact of psychological autopsies on manner of death determination for typical and equivocal cases of Russian roulette death.

ners could then be argued as sufficiently ideal. However, this study provides support for the use of psychological autopsies, as even brief reports had a demonstrable and significant impact on determination of manner of death in equivocal cases. In four of five equivocal cases, inclusion of psychological autopsies resulted in significant differences (up to a $P < 0.0001$) in certifications between control and experimental conditions. Unexpectedly, psychological autopsies had a significant effect in two typical cases where suicide was the anticipated response. In addition, inclusion of psychological information was correlated with manner of choice certainty in five of ten typical and equivocal cases.

Before the present research, other attempts to show the utility and validity of psychological autopsies have involved descriptive case studies—for example Litman et al [14]. An important goal of the present work has been to spark interest in the technique, thereby increasing its use among medicolegal officials. It was stated earlier that scientific support for the validity of the technique was imperative to its acceptance and increased use. It is the authors' contention that within its limitations, this study has provided that empirical support.

A related and important issue to the medicolegal professional, the suicidologist, and ultimately the public at large involves the improvement of the vital registry system of the United States. Innovations such as standardized criteria for determination of manner of death and the

use of psychological autopsies may contribute to improving this system. Additionally, more accurate certifications provide better data to researchers who investigate important health issues, trends, and phenomena related to natural and unnatural death (for example, the clusterings of youth suicide).

Further research is critical to the continued and increased use of psychological autopsies. Having shown some of the general impact of psychological information, a valuable next step would involve the investigation of specific components of a victim's psychological profile (such as what aspects are most critical in determining suicide intentionality?).

Suicidologists commonly define the word "suicide" in terms of psychological intention. It is their bias that understanding suicide requires understanding the psychological intention of the attempter/completer. The fundamental value of the psychological autopsy is to help provide this crucial understanding of self-destructive intent. Those who support the use of the technique believe that suicidal intent can be systematically established after a death has occurred.

The use of psychological information can clarify the gray areas in manner of death determination in even the most difficult equivocal cases. For example, in cases of childhood suicide, research has shown that children ages five through nine can exhibit clear and intended suicidal behavior [20]. Yet many medicolegal professionals use arbitrarily defined cutoff ages (such as age ten) for determining whether a child is psychologically capable of committing suicide. In these contexts, the psychological autopsy technique is most useful. The technique provides the means to understand individual differences, reducing the chance of arbitrary error and providing a more accurate and thorough determination of death.

The authors contend that increased involvement of the behavioral scientist on both research and applied levels can only augment the work of coroners and medical examiners, resulting in more accurate mortality statistics and increased public awareness. On a more theoretical level, the psychological autopsy is a useful clinical tool that helps bridge the gap between traditional hard science and softer behavioral science, providing a more comprehensive understanding of the related issues.

In addition, psychological autopsies are beneficial beyond manner of death determination. The technique can potentially provide families subjected to equivocal death access to the truth, so that they may experience proper bereavement. Indeed, bereavement counseling has become a valuable offshoot of the technique. On a practical level, psychological autopsies can help clarify legal issues and insurance claims, saving costly court fees and valuable time for a medical examiner's office [19].

Finally, the psychological autopsy can be a valuable research tool providing data about the very nature of self-inflicted death. The scientific study of psychological and behavioral antecedents of self-destructive behavior leads to the development of better techniques of prevention and intervention that ultimately help to save lives.

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