

Literature on terrorism: A bibliometric analysis of articles published during 1981-1990

Mumtaz A. Anwar¹ and Sultan Al-Daihani²

¹Department of Library and Information Science
University of the Punjab, Lahore, PAKISTAN

²Department of Library and Information Science
College of Social Sciences
Kuwait University, KUWAIT

e-mail: gombak_98@yahoo.com; s.aldaihani@ku.edu.kw

ABSTRACT

This study conducted a bibliometric analysis of papers on terrorism published in journals from 1981-1990. The 402 citations were retrieved from Social Science Citation Index (SSCI) via DIALOG. The findings show that the annual growth of this literature is unstable. These papers come from many disciplines indicating that terrorism has not yet developed into a specialty. The literature is dispersed, mostly thin, in 139 journals with no identifiable core. Single-author and English language publications are dominant. Most of the papers originate in the U.S.A and U.K. It is suggested that indexing should be expanded to cover journals published in developing countries and their languages. It is also suggested that studies on larger samples should be conducted to identify rates of growth, core authors, core journals, and changes in research topics.

Keywords: Bibliometric analysis; Terrorism literature

INTRODUCTION

Acts of political violence, in one form or another, have been committed through out human history. These acts started to become the subject of public discourse when they began to be perpetrated on a larger scale. Scholars generally agree that the terms 'terrorism' and 'terrorist' date back to the late 18th century revolutionary France. This phenomenon started to spread due to a variety of reasons and in various forms during the 1960s. As this violence increased, the production of literature on various aspects of terrorism and in a variety of formats also started to grow in volume. This naturally led to the issue of determining what terrorism really was resulting in a lot of materials dealing with it and leading to the formulation of many definitions. These definitions, however, reflected the view of those who formulated them and were not agreeable to those who differed with such views.

Many attempts have been made to come up with a comprehensive and value-free definition which is generally acceptable. In the situation as it is, it may be worthwhile to reproduce two definitions, one used by the U. S. Department of State and the other proposed by the UN Secretary General. The State Department defines terrorism as the "premeditated, politically motivated violence perpetrated against noncombatant targets by sub national groups or clandestine agents, usually intended to influence an audience"

(U. S. Office of Coordinator of Counterterrorism 2003, p. 13). The UN Secretary General proposes that “any action constitutes terrorism if it is intended to cause death or serious bodily injury to civilians or non-combatants with the purpose of intimidating a population or compelling a government or an international organisation to do or abstain from doing any act” (Costa 2005). The political and scholarly community, both national and international, has not been able to agree on a comprehensive and acceptable definition of this complex phenomenon.

Confusion in defining terrorism notwithstanding, the literature dealing with it has been growing very fast. This literature, both descriptive and research-based, has been produced by writers belonging to many professions and disciplines from many countries in many languages. It appears that most of the literature has been produced in English by authors coming from the Western countries. It is adequately covered by relevant databases and has resulted in the compilation of many bibliographies. Significant examples of such bibliographies are those by Lakos (1986; 1991), Mickolus (1980), Mickolus and Flemming (1988), and a number compiled at the U. S. Library of Congress, e.g., Berry, Curtis and Hudson (1998). Several databases related to social science disciplines, especially the *Social Science Citation Index* (SSCI), which currently indexes 2,803 journals (Thomson Reuters 2010), cover material on this subject. Some of this literature has been reviewed earlier by Reid (1983) and Miller (1988) who tried to “expose the main concentrations of study and to discover gaps in the research pertaining to this complicated issue” (p. 64). Some writers have analyzed the literature on terrorism to see if this topic has developed into a specialty (Gordon 1999; Reid 1983; 1997).

A couple of writers have studied the literature on terrorism using bibliometric analysis. Bibliometric techniques are used to examine the growth of knowledge in various subjects, identify research trends, core authors and core sources. An analysis of a defined set of subject literature can be used to identify its research focus and major trends that exist and may be developing. It has been shown that such investigations are useful for researchers.

RELATED LITERATURE

Bibliometric research on terrorism literature is very limited. Most of the studies are conducted by Edna Reid and Avishag Gordon. The first systematic multi-method analysis of terrorism literature based on 1,096 publications was conducted by Reid (1983). This study identified terrorism as a developing field of study with its own core publications, authors, and concepts. It further concludes that “terrorism is at the network stage of development and that there are major obstacles facing the concept before it progresses to the specialty stage” (p. 214). She also reported that 75 percent of the 600 personal authors contributed only one paper each and six of the 335 journals published 21 percent of all the papers (Reid 1984). Reid (1997) continued her work on the issue and studied the growth of research on terrorism “using a model for analyzing the evolution of knowledge in a specialized community and the influence on decision making” (p. 92). She concluded that “the majority of the research has been presented from a one-sided perspective of terrorism from below (small insurgent groups) as opposed to research on the broader issues of etiology and state sponsored terrorism (terrorism from above)” (p. 103).

Gordon (1998) examined the spread of articles on terrorism using 2,454 citations published from 1988 to 1998 retrieved from the UNCOVER database. The data show that 24 percent of these papers were published in three journals. The number of journals covered in the

study is not mentioned. She, however, concludes that the dispersal of these citations confirms Bradford's Law of Scatter. Gordon (1999) also looked at 278 dissertations dealing with terrorism produced from 1969 to 1997 which came from diverse disciplines and covered a variety of aspects of terrorism. She concluded that the growth of dissertations on the subject was slow as compared to political science and mass communication. This study confirmed the earlier findings that terrorism had not yet developed into a specialty.

A pilot scientometric study was conducted by Markusova, Wilson and Davis (2002) to trace the developments in biodefence research and its main players. They analyzed 2,870 citations retrieved from the Science Citation Index covering the period from 1991 to 2000. The literature on biodefence increased by 250 percent during this decade and was mainly contributed by the U.S., Russia, U.K., France and Germany.

The growth of literature on terrorism, national security and homeland security was investigated by Gordon (2005a) based on data collected from Science Citation Index, Ingenta, and OCLC's FirstSearch databases. It was found that the literature on terrorism and national security originated in social sciences, whereas the literature on homeland security came from the sciences. She concluded that the literature on these three research areas had grown impressively with the source journals belonging to different kind of disciplines. An interesting study on the core and peripheral literature on terrorism was conducted by Gordon (2005b). She used several databases to identify core and peripheral journals using the period 2001-2003. It was found that the material on terrorism was mainly published in the peripheral journals and that "most of the contributors to peripheral terrorism literature are not aware of the core material" (p. 413).

Reid and Chen (2007) conducted a multi-method study to map the research domain of terrorism. The data came from 4,189 citations derived from 10 databases. They identified 42 core researchers with their institutional affiliations and important publications, specialty of clusters of authors, and major topics dealt with. The authors intended to continue their work to identify "the development trends in terrorism across various periods and further examine the evolution and topic changes in the field" (p. 53).

The literature reviewed above shows that bibliometric studies of the literature on terrorism are still limited and there is a need to analyze it from a variety of angles. The present study looks at the journal articles produced during 1981-1990 using several bibliographical features.

OBJECTIVES AND METHOD

The objective of this study was to analyze the journal papers on terrorism published during 1981 to 1990. It used the following research questions to achieve this objective.

1. What is the periodic growth pattern of these papers?
2. What is the pattern of subject dispersal of these papers?
3. What author patterns are exhibited in this literature in the following areas: author productivity; leading authors; and authors' institutional affiliation?
4. What is the pattern of journals producing this literature in terms of discipline of journals, number of papers produced by them, and their geographic origin?
5. What is the language dispersal of these papers?

The Web of Knowledge Social Science Citation Index on DIALOG was selected as the source of citations for papers on terrorism. It was also decided to limit the analysis to articles published in journals only. Terrorism as a keyword combined with year of publication from 1981 to 1990 was used as a search term. Researchers have planned to conduct a series of studies covering the period from 1981 to 2009 in three successive stages. This paper reports the result of the first phase covering the period from 1981 to 1990. The period covered in the first phase is significant because of two reasons: (a) it begins after the occupation of Afghanistan by the Soviet Union and the Iranian revolution; and (b) it ends before the dissolution of the Soviet Union. The two events of 1979 added another dimension to terrorism. This decade also covers the last two of four stages of the growth of terrorism as a specialty (Reid, 1997). We expect that the subsequent bibliometric analysis to be conducted of post-1990 era will indicate the progression of the literature in this specialty. Analysis of the literature in the period selected for the first phase provides a framework for comparative and evolutionary treatment of the literature on terrorism.

The search results consisted of 777 records which were downloaded to Pro-Cite for statistical analysis. All these records were printed and checked one by one to remove citations for book reviews, corrections, letters, editorials and duplicates. A large majority of the citations removed consisted of book reviews. This cleaning process resulted in 402 unique citations for papers on terrorism. Each of these citations was used to identify the following variables for bibliometric analysis: year of publication; subject of the paper; author productivity and affiliation; journal's contribution and geographic origin; and language of the paper. The subject categories used in this study were based on Lakos' bibliographies (1986, 1991) with slight modifications.

RESULTS AND DISCUSSION

This section presents the results of data analysis based on various bibliographic features of the 402 papers covered by this study.

Periodic Growth of Papers

The data on periodic growth of 402 papers on terrorism published during the decade of 1981-1990 are presented in Table 1. It appears that the annual growth during this decade is not consistent. While there is a high growth in four years, i.e. 1982, 1984, 1986, and 1987, there is a negative growth in 1983 and 1988 and a severe decline in 1990. This uneven growth is hard to explain. The year 1987 produced the highest number of papers. It has been previously observed that "terrorism publications experienced an explosive growth in the late 1970s and [was] approaching an essentially constant annual publication rate" (Reid 1983, p. 105). Gordon (1998) reported a growth rate of 42 percent for two periods of 1996-1998 (3 years) over 1988-1995 (8 years) without indicating the annual rate. There is a need to look at a larger body of literature to identify long-term trend in annual growth.

Subject Dispersion of Literature

Terrorism, as a subject, is of interest to a diverse variety of writers including scholars from many disciplines, politicians, and journalists. These 402 papers divide themselves into a number of diverse topics, sometimes general and at others specific. Table 2 presents this distribution over 17 areas with 'Specific Regions and countries' topping the list with 91 followed by 'Counter Measures' with 66 papers. Environmental Terrorism and Urban

Violence have only one paper each. More than half of the territory-specific terrorism papers are related to Europe and Middle East combined. A look at these 17 subjects indicates the wide spread of interest in terrorism.

Table 1: Periodic Growth of Papers (N = 402)

Year of Publication	No. of Papers	Percentage of Papers	Annual rate of Growth
1981	26	6.47	-
1982	36	8.96	+38.46%
1983	23	5.72	-36.11%
1984	29	7.21	+26.09%
1985	26	6.47	-11.54%
1986	50	12.48	+92.31%
1987	70	17.41	+40.00%
1988	53	13.18	-24.29%
1989	57	14.18	+7.55%
1990	32	7.96	-78.13%

Table 2: Subject Dispersion of Papers (N=402)

S. No.	Subject	No. of Papers (%)	Rank
1	Specific Regions and Countries Europe (32) Middle East (19) US & Canada (15) Latin America (11) Asia & Australia (8) Africa (6)	91 (22.64)	1
2	Counter Measures	66 (16.42)	2
3	Domestic and International Legal Aspects	54 (16.42)	3
4	General Aspects	37 (9.20)	4
5	Media and Terrorism	24 (5.97)	5
6	Theories of Terrorism	24 (5.97)	5
7	Psychological and Social Aspects	23 (5.72)	6
8	State-Supported Terrorism	18 (4.48)	7
9	Travel and Terrorism	15 (3.73)	8
10	Business and Terrorism	13 (3.23)	9
11	Strategies and Tactics	10 (2.49)	10
12	Unconventional Terrorism	10 (2.49)	10
13	Technology and Terrorism	9 (2.24)	11
14	Maritime Terrorism	4 (1.00)	12
15	Conflict Resolution	2 (0.50)	13
16	Environmental Terrorism	1 (0.25)	14
17	Urban Violence	1 (0.25)	14

Authorship Patterns

(a) Author Productivity

The data related to authorship patterns are presented in the following sections. Table 3 gives details of the number of authors producing each paper. The 402 papers were produced by 384 authors with an average of 1.05 papers per author. A large majority of the papers (n=354, 88.06%) was single-author publications and that 322 (83.85%) of the 384 authors produced only one paper each. It is interesting to note that Reid (1984) reported that 75 percent of 600 personal authors in her sample contributed only one publication each. These figures which are higher than single-author publication dominance in many disciplines do not meet the Lotka's law of author dispersal. Only 48 (11.94%) papers were produced through collaborative effort. The number of collaborative papers also indicated that such effort was dominated by two-member teams producing 38 (79.17%) of the 48 papers. The trend in collaborative writing, however, had been increasing from five papers produced during 1981-1982 to 19 in 1987-1988 and 13 in 1989-1990.

Table 3: Number of Authors by Number of Papers

No. of Authors	No. of Papers	% of Papers
1	354	88.06
2	38	9.45
3	6	1.49
4	3	0.75
6	1	0.25

(b) Top Authors

In spite of the fact that most of these papers are single-author publication, there are 13 authors who each produced three papers or more. Their names are listed in Table 4. Since the number of publications is small which cover only a decade, it is very difficult to label any of these authors as core writers. It may be interesting to note that three of these authors (Alexander, Jenkins and Wilkinson) are included in the list of 32 leading terrorism researchers identified by Reid (1997).

Table 4: Authors Who Contributed 3 or More Papers

S. No.	Name of Author	No. of Papers
1	Noorani, A. G.	5
2	Wilkinson, P.	5
3	Bremer, L. P.	4
4	Jenkins, Brian M.	4
5	Murphy, J. F.	4
6	Alexander, Y.	3
7	Crenshaw, M.	3
8	Leventhal, P. L.	3
9	Livingstone, N. C.	3
10	Ludwikowski, R. R.	3
11	Nudell, Mayer	3
12	Sandler, Todd	3
13	Shank, Gregory	3

(c) Author Affiliation

Author affiliation was available for only 264 (65.67%) of the 402 papers. Affiliation was tabulated for the first author only. These 264 first authors belonged to 169 organisations in 16 countries. The largest share of these organisations (n = 115, 68.05%) and authors (n=190, 71.97%) belong to the United States. Academic institutions from 16 nations contribute 168 (63.64%) papers, led by the U.S. with 112 (66.67%). Fifty (18.94%) papers originated from non-governmental establishments while 46 (17.42%) from government related offices.

The organisations that produced three or more papers each are listed in Table 5. U.S. Dept. of State contributed 11 papers and Rand Corporation eight. Eighteen organisations produced three papers each.

Table 5: Organisations Producing Three or More Papers

S. No.	Name of Organisation	Number of Papers
1	U.S. Dept. of State, Washington, DC	11
2	Rand Corporation, Monica, CA	8
3	U.S. Federal Bureau of Investigation, Washington, DC	5
4	University of Aberdeen, Scotland	5
5	Harvard University, Cambridge, MA	4
6	Tufts University, Medford, MA	4
7	University of Houston, Houston, TX	4
8	American University, Washington, DC	3
9	Arizona State University, Tempe, AZ	3
10	Catholic University of America, Washington, DC	3
11	George Washington University, Washington, DC	3
12	Georgetown University, Washington, DC	3
13	Haifa University, Israel	3
14	Hebrew University, Israel	3
15	Nuclear Control Institute, Washington, DC	3
16	Simon Fraser University, Canada	3
17	Tel Aviv University, Israel	3
18	University of Alberta, Canada	3
19	University of Maryland, College Park, MD	3
20	University of Sydney, Sydney, Australia	3
21	U. S. Dept. of Justice, Washington, DC	3
22	U.S. Senate, Washington, DC	3
23	U. S. Navy, Washington, DC	3
24	Villanova University, Villanova, PA	3
25	Wesleyan University, Middletown, CT	3

Source Journals

(a) Subject Dispersal of the Journals

The 139 journals that published these 402 papers come from a wide variety of disciplines (Table 6). It is dominated by political science and law and trailed by only one journal publishing two papers about computer security. A look at the 19 subject categories in Table 6 confirms the wide scatter of this literature and that terrorism is a multidisciplinary issue. These figures also show that terrorism has not yet developed its own focus as indicated by earlier writers (Gordon 1999; Reid 1983, 1997).

Table 6: Subject Dispersal of Journals (N = 139)

S. No.	Subject	No. of Journals (%)	No. of Papers (%)
1	Political Science	23 (15.55)	53 (13.18)
2	International Relations	19 (13.67)	52 (12.94)
3	Business and Economics	17 (12.23)	31 (7.71)
4	Criminology and Law Enforcement	13 (9.35)	170 (42.29)
5	International Law	9 (6.47)	11 (2.72)
6	Science and Technology	7 (5.04)	9 (2.24)
7	Law	6 (4.32)	7 (1.74)
8	Psychology	6 (4.32)	9 (2.24)
9	Sociology	6 (4.32)	8 (1.99)
10	Journalism and Media	5 (3.60)	8 (1.99)
11	Medical Sciences	5 (3.60)	6 (1.49)
12	Social Sciences	5 (3.60)	6 (1.49)
13	Ethnic Interests	4 (2.88)	9 (2.24)
14	History	4 (2.88)	10 (2.49)
15	Public Health and Safety	3 (2.16)	3 (0.75)
16	Art and Architecture	2 (1.44)	2 (0.50)
17	Public Administration	2 (1.44)	2 (0.50)
18	Travel and Tourism	2 (1.44)	4 (1.00)
19	Computer Security	1 (0.72)	2 (0.50)
		139 (100.03)	402(100.02)

(b) Journals and the Number of Papers Published by them

The 402 papers analyzed in this study come from 139 journals, with an average of 2.89 papers per journal. One of the journals, i.e. *Terrorism*, contributed 122 (30.35%) papers whereas 84 (60.43%) journals produced one paper each with a share of only 20.90 percent. The top five (3.60%) journals together contributed 164 (40.80%) papers and the top 20 (14.39%) journals produced almost half (n=239, 59.45%) of all papers. The productivity of the top 20 journals is given in Table 7.

It appears that this literature on terrorism is too scattered with a small number of leading journals. The most prominent journal, i.e. *Terrorism*, could not survive and has ceased publication. Based on the data presented in this study, although it is limited to 10 years, it is hard to identify any core journals dealing with terrorism.

(c) Geographic Origin of the Journals and Their Papers

The place of publication of three journals could not be traced. The details of the geographic origin of 136 journals are given in Table 8. Almost two-thirds (n = 90, 66.18%) of the journals are produced in the U.S., followed by U.K. with 21 (15.44%) titles. The remaining 25 (18.38%) are published by 14 countries. If we look at the broader geographical grouping, North America produces 92 (67.65%) journals, Europe 38 (27.94%), Asia four (2.94%), and Australia two (1.47%).

Geographic distribution of papers from these journals presents a similar picture. U.S. dominates with 301 (75.44%) papers, followed by U.K. with 36 (9.02%) and Germany with

19 (4.76%). The remaining 13 countries contribute 43 (10.78%) papers. It is surprising that India contributes 14 papers from only two journals.

Table 7: Journals Publishing Four or More Papers Each

S. No.	Name of the Journal	No. of Papers (%)
1	Terrorism	122 (30.35%)
2	Crime and Social Justice	14 (3.48%)
3	Economic and Political Weekly	10 (2.49%)
4	Annals of the American Academy of Political and Social Science	9 (2.24%)
5	Police Chief	9 (2.24%)
6	Conflict	7 (1.74%)
7	Orbis – A Journal of World Affairs	7 (1.74%)
8	Foreign Affairs	6 (1.49%)
9	Journal of Security Administration	6 (1.49%)
10	Australian Quarterly	5 (1.24%)
11	International and Comparative Law Quarterly	5 (1.24%)
12	Kriminalistik	5 (1.24%)
13	New Republic	5 (1.24%)
14	Social Justice	5 (1.24%)
15	Aggressive Behavior	4 (0.99%)
16	Journal of Strategic Studies	4 (0.99%)
17	Management Review	4 (0.99%)
18	Risk Management	4 (0.99%)
19	World Affairs	4 (0.99%)
20	World Today	4 (0.99%)

Table 8: Country of Origin of Journals

S. No.	Name of Country	No. of Journals N = 136	% of Journals	No. of Papers N = 399	% of Papers
1	U.S.A	90	66.18	301	75.44
2	U.K	21	15.44	36	9.02
3	Germany	7	5.15	19	4.76
4	Netherlands	3	2.21	3	0.75
5	Australia	2	1.47	6	1.50
6	Canada	2	1.47	6	1.50
7	India	2	1.47	14	3.51
8	Austria	1	0.74	1	0.25
9	Finland	1	0.74	1	0.25
10	France	1	0.74	2	0.50
11	Greece	1	0.74	1	0.25
12	Iraq	1	0.74	3	0.75
13	Israel	1	0.74	1	0.25
14	Italy	1	0.74	1	0.25
15	Norway	1	0.74	2	0.50
16	Russia	1	0.74	2	0.50

Language Dispersal of the Papers

The literature analyzed in this paper is mostly in English (n =386, 96.02%). Only 16 (3.98%) papers out of 402 come from other European languages, mainly German. None comes from an Asian or African language. There can be two reasons for this phenomenon: one, it is the western countries, mainly English-speaking, where terrorism has been in focus, therefore, authors from these countries have been actively writing about it; and two, the literature produced in other languages is not visible because of the scope of the SSCI indexing service and lack of coverage of journals from developing countries. Therefore, there is a need for a concerted effort to identify and index terrorism-related literature produced in developing countries.

CONCLUSIONS

The results of this study based on bibliometric analysis of journal literature for the period 1981-1990, show that the annual growth of the literature on terrorism is uneven and unstable. There is a need to look at a larger body of literature to identify long-term trends in annual growth, particularly the post 1990 era that has left a significant mark on the landscape of the world events. In this context, the usefulness of these results will be more evident as the current study provides a good foundation and appropriate framework for further analyses. The subject spread of this literature confirms the earlier findings that terrorism has not yet developed into a specialty, see for example in Markusova, Wilson, and Davis (2002), Gordon (2005) and Alsaleh and Fawaz (2006). This spread has implications for both researchers and information professionals to expand their access to many databases in order to identify more literature in order to be aware of the shifts in research trends. There is also a need to study the curricula in related disciplines such as area studies, political science, international relations, sociology, military science, security sciences, etc. in order to examine how much coverage is given to terrorism. It will demonstrate the interest of the current scholars and training given to future researchers.

The spread of papers in many journals in this phase of bibliometric analysis did not exhibit a real core, implying that it was hard for researchers to be fully aware of the literature on this topic. It has already been found that researchers who publish their papers in peripheral journals are not aware of the core material (Gordon 2005b). The results of this study reveal that there is a negligible contribution from journals published in developing countries and their languages. There is an urgent need to identify and index terrorism-related literature contributed by developing countries and by other languages. If we look at the developments during the late nineties and the first decade of the 21st century, we see a strong resurgence of terrorist activities in different parts of the world. *Al-Qaida* network, the 9/11 event, and follow up terrorist expeditions had a strong influence on the production of a body of literature on the subject of terrorism (Hoffman 2002). The subsequent phases of our research will enhance our understanding of the published literature and emergent scholarly patterns. In our subsequent studies we are expanding our search strategies by adding the names of terrorist organisations, initiatives of security agencies, legislative acts, and the countries figuring prominently in the terrorism dynamism. Our review of literature has also indicated that such strategies for covering the relevant literature should also include new areas related to terrorism, e.g., cyber terrorism, money laundering and drug trafficking.

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