

## **Five Decades of Scientific Development on “Attachment Theory”: Trends and Future Landscape**

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### **ABSTRACT**

Attachment Theory is one of the most frequently used frameworks which revolutionised the understanding of human behaviour, from early childhood to adulthood. Attachment Theory's scholarly output was examined using a quantitative bibliometric approach, based on rigorous facts extracted from the WoS databases from 1970 to 2017. Overall, 1,700 documents in the category “Psychology” with the topic “Attachment Theory” were analysed to find trends of publications, networking coupling, keywords frequencies, top authors, and highly cited papers. A qualitative content analysis of the top 20 documents with the highest average citation per year was done to provide insight on document approaches. The results show that the scientific productivity in “attachment theory” is highly skewed. The authors recommend publishing attachment theory related articles in an open access journal. There is a need for further interdisciplinary research and practice collaboration to move beyond the sole psychological approach and realise the importance of multi-disciplinary approaches.

*Keywords:* Attachment Theory, adult attachment, bibliometric, communication, relationship, scientific productions, top cited

### **ARTICLE INFO**

#### *Article history:*

Received: 01 February 2018

Accepted: 12 June 2018

Published: 28 September 2018

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### **INTRODUCTION**

During the past seven decades, there has been a strong accent on “Attachment Theory”. It has revolutionised perceptions about relationships in psychology. Attachment theory was initiated by Bowlby, Ainsworth, and colleagues in the early 1930s to characterise emotional bonds between

caregivers and children (Bretherton, 1992). The fundamental notion of attachment theory is that individuals are born with the inward psychological system (attachment behavioural system) that stimulate them to seek proximity to caring others (attachment figures) in times of need (Bowlby, 1982). "The attachment theory explains how mindful, caring, and supportive parental figures during the childhood will create and solidify children's positive mental representations of others (as competent, dependable, and well intentional), their pervasive sense of safety, security and emotions (Akhtari-Zavare & Ghanbari-Baghestan, 2010); as well as their ability to recognise, acknowledge, and regulate emotions" (Shaver, Mikulincer, Gross, Stern, & Cassidy, 2016). Ultimately, Bowlby's work created the most pervasive and strong personality development and close relationship theories that have deep impact on society, psychiatry, childcare policy (Karen, 1994; Sroufe, 1986).

A wide range of scope of study details attachment theory having a contribution in conceptualising the issues not only in psychology, but in communication, management, sociology, criminology, business, etc. In psychology, Shaver applied attachment theory on adolescents and loneliness (Rubenstein & Shaver, 1982; Shaver & Hazan, 1984; Weiss, 1973), Mikulincer used attachment theory for studying helplessness, depression, combat stress reaction, post-traumatic stress disorder, and death anxiety (Mikulincer

& Shaver, 2017), and Alexander applied attachment theory for the study of sexual abuse (Alexander, 1992). In communication, Fraley and Davis (1997) used attachment formation in young adulthood and romantic relationships, and Byrne (1997) used adult attachment patterns to predict various aspects of interpersonal relationships. In management, Grover and Crooker (1995) investigated the impact of providing comprehensive family-friendly policies that might have a positive impact beyond individual employees. Another work tried to develop a model to investigate the effect of social and technological factors on users' donation behaviour based on the sociotechnical system framework and attachment theory (Wan, Lu, Wang, & Zhao, 2016). In sociology, there is a study on "residents' perspectives of a world heritage site in the pitons management area, St. Lucia" (Nicholas, Thapa, & Ko, 2009). In Business, Bhattacharya and Sen (2003) used attachment theory for developing a framework for understanding consumers' relationships with companies.

Since approaching attachment theory is still in the fast growth period, especially in less developed countries, keeping up to date on the latest developments and trends can be challenging; however, bibliometrics presents a useful tool to assess the large amount of literature within the field. Bibliometrics refers to a series of procedures of evaluating the scientific production based on the number of publications, the prestige of the journal in which articles are published, and

citation of these publications (Bach, Jérôme, & D'Artemare, 2011). Bibliometric studies analyse connections between derivatives of publication output and citation impact (Glanzel, 2008), assessment of scientific activities (Feng, Wang, & Ho, 2009; Zitt & Bassecouard, 1994), countries' scholarly outputs (Etemadifard, Khaniki, Baghestan, & Akhtari-Zavare, 2018), assessment of scientific activity (He, Zhang, & Teng, 2005), and compares the relative scientific contributions of specific research area, groups, or institutions (Rosas, Kagan, Schouten, Slack, & Trochim, 2011). Bibliometrics cannot be substituted for qualitative peer evaluation. Therefore, it should be used with precaution to evaluate the scholarly outputs (Franceschini & Maisano, 2011). To support and add more insight to the results of this study, qualitative content analysis was also used for further elaboration on scholarly output in the field.

Considering "attachment theory" is one of the prominent theories in the field of psychology from the past seven decades, there are few studies that focus on the trends and landscape of its scientific production worldwide. This study addresses this gap while attempting to contribute to this effort by using the bibliometric approach to analyse diachronically the trends and presence of "attachment theory" in mainstream science journals, knowing the countries that are leaders of development of research on attachment theory, prime researchers in the world, and core science journals in issuance of attachment theory.

## METHODS

The data were collected from the Web of Science Core collection (WoS) on 2017. The period of data collection was from 1970 to 2017. The six databases of WoS consist of Science Citation Index Expanded (SCI-Expanded), Social Science Citation Index (SSCI), Arts and Humanities Citation Index (A&HCI), Emerging Sources Citation Index (ESCI), Conference Proceeding Citation Index-Social Science & Humanities (CPCI-SSH), Conference Proceedings Citation Index Science (CPCI-S), Book Citation Index-Social Sciences & Humanities (BKCI-SSH), and Book Citation Index-Science (BKCI-S) were used.

The WoS comprises conference proceedings from 1990 and ESCI from 2015 in its database. The data was exclusive to the WoS category of Psychology, and the search title was TS = "attachment theory. In Table 1, a brief table of data collection is demonstrated. Due to the above limitation, the data recovered and used for data analysis ended in 2017.

The dispensation of documents in different WoS databases were Science Citation Index Expanded (SCI-Expanded) (179), Social Science Citation Index (1,564), Conference Proceeding Citation Index-Social Science and Humanities (103), Book Citation Index-Social Sciences and Humanities (59), Emerging Sources Citation Index (53), Arts and Humanities Citation Index (26), Conference Proceedings Citation Index Science (16), and Book Citation Index-Science (10). For the field of expertise, the authors were chosen for

analysis. For qualitative analysis, the top document was chosen relying on “Average Citation per Year” (ACPY). To identify the highly impacted document, ACPY is more precise and scientific than total citation.

## RESULT AND DISCUSSION

The total number of 1700 documents were obtained from WoS in the category of “Psychology” related to “Attachment Theory”, where 1558 (91.65%) were indexed as Non-Open Access (NOA) and 142 (8.35%) documents were indexed as Open Access (OA). Out of the total number of obtained documents, 1382 (81.29%) documents were “Articles” followed by 134 (7.88%) documents which were “Review”, 105 (6.17%) documents which were “Proceeding Paper”, 63 (3.70%) documents which were “Editorial Material”, and 62 (3.64%) documents which were “Book Review”. Most retrieved documents (91.06%, or 1584 documents) were in “English”, followed by “Germany” with 6% (102) documents, “Spanish” 1.06%

Table 1  
*Data collection process*

No	Search Term	Result
1	WC=Psychology	1,263,776
2	TS= “attachment theory”	2,603
3	#1 AND #2	1,700

(18) documents, and “French” 0.76% (13) documents.

## The Trends of the Publications

To gain a more detailed understanding of the trend of the publications about attachment theory, the total number of related publications were analysed over the past five decades. The results of the study show that until 1990, there were less than three, which is only contributed 1% of the scientific productions related to “attachment theory” per year. As Figure 1 indicates, from 1990 until 2000, the number of scientific productions had a fluctuation rate. However, from 2010 on, there was very positive growth in publications each year, continuously.

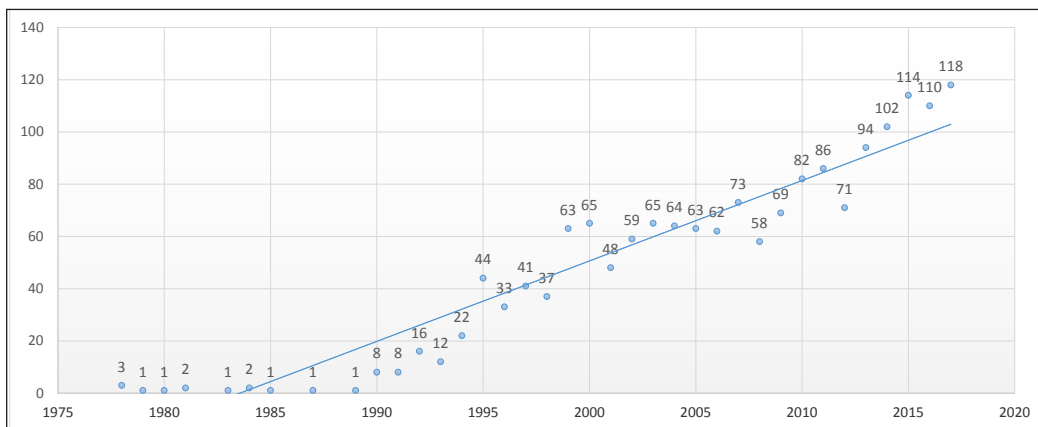


Figure 1. The trends of the publications

### Top Countries and Networking

The total number of 1700 documents related to this study were investigated, from 1970 to 2017 for all countries. The results for the 10 top countries indicated that these countries contributed 1663 documents (97.82%) of all scientific production, where the United States alone contributed 873 documents (51.35%), followed by England with 178 documents (10.47%), Canada with 144 documents (8.47%), Germany with 119 documents (7%), and Israel with 112 documents (6.58%).

Figure 2 shows the world distribution of the scientific outputs based on each country's contribution in the research. A free version of StatPlanet software (<https://www.statsilk.com/software/statplanet>) was used in this study for creating the interactive world map and to visualise the distribution of all papers among different countries (Kalantari et al., 2017).

According to the results of the study, 56 countries were traced with at least one scientific publication in “Attachment Theory” for the duration of study. As displayed in Figure 2, the position and ranks of the countries' scientific contributions to “attachment theory” in different regions is not homogeneous. A look at the relative contribution of each region to the worldwide output in “Attachment Theory” shows that Central Asia had the most limited participation in the world aggregate, at zero. “Attachment Theory” related research within Southern Asia and Sub-Saharan African regions also is rather limited and not extensively researched. The skewness of scientific productions of “attachment theory” across the world might raise the question of whether attachment orientations are universal or variable across cultures (Ijzendoorn & Sagi, 1999) like what Turan et al. (2016) highlighted by stating that

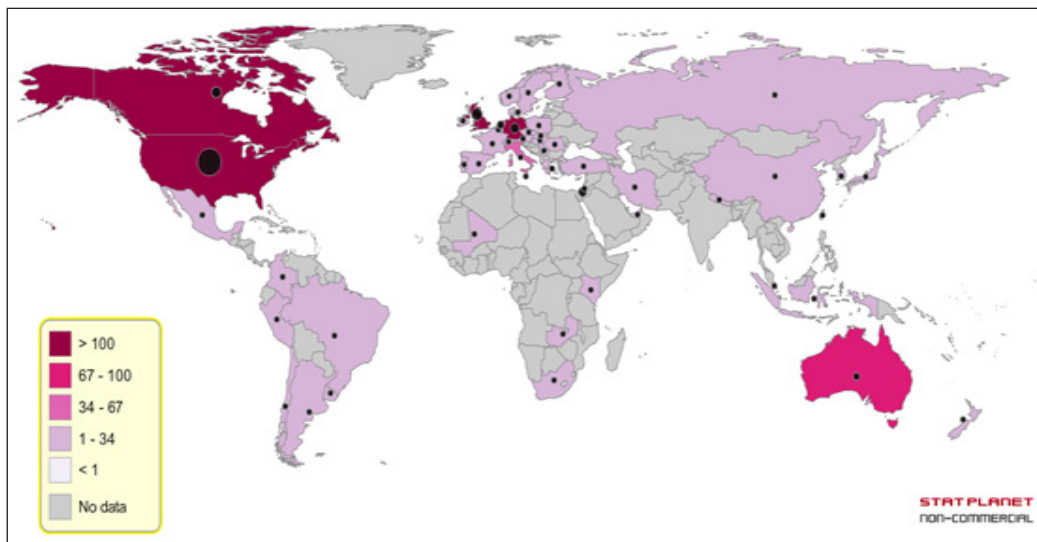


Figure 2. World distribution of the documents

“attachment” is more related to individualist cultures than collectivist cultures (Turan, Hoyt, & Erdur-Baker, 2016) in the regions such as India, Central Asia, Southern Asia and Sub-Saharan African.

The current trend of networking among the countries extracted from VOSViewer (<http://www.vosviewer.com>) output is based on each grouping colour code. The abbreviation “VOS” in VOSViewer stands

for “visualisation of similarities” (Van Eck & Waltman, 2010). VOSViewer is a computer program that plots a relevance distance–based map and clustered keywords from text in titles and abstracts of documents (Khalil & Crawford, 2015). Figure number 3., shows countries networking as well as time dependent networking among the countries that had the highest contribution to “attachment theory” scientific outputs.

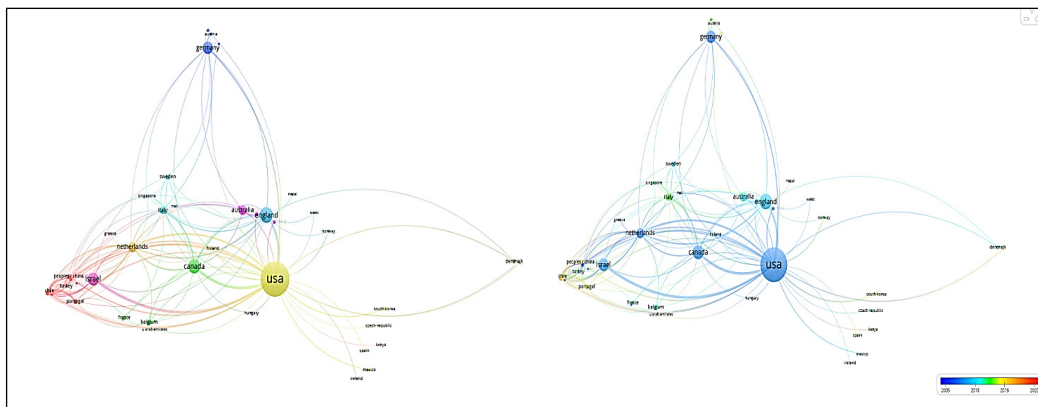


Figure 3. Countries Networking on Attachment Theory

Based on the Figure 3, the strongest networking for joint scientific production exists between the United States, England, Germany, and Israel. However, based on the Time Dependent networking (right side), a new type of networking also can be seen among newly emerging countries in this area, like Italy, Australia, China, Chili, Portugal, and Belgium.

### KeyWords Plus

KeyWords Plus provides search terms extracted from the titles of documents cited in each new article in the WoS database, an independent supplement for title-words

and author keywords (Dong, Xu, Luo, Cai, & Gao, 2012; Garfield, 1990; Kalantari et al., 2017). In other words, KeyWords Plus comes from the most frequent keywords of each document’s references title. Therefore, analysing KeyWords Plus demonstrates the trend of the current publications based on their references. KeyWords Plus is one of the essential types of information about the published documents, which shows important research trends for monitoring the development of science (Kalantari et al., 2017). Figures 4 to 9 illustrate the top most frequently used KeyWords Plus, over the total number of 1700 documents.



## Five Decades Scientific Development on “Attachment Theory”

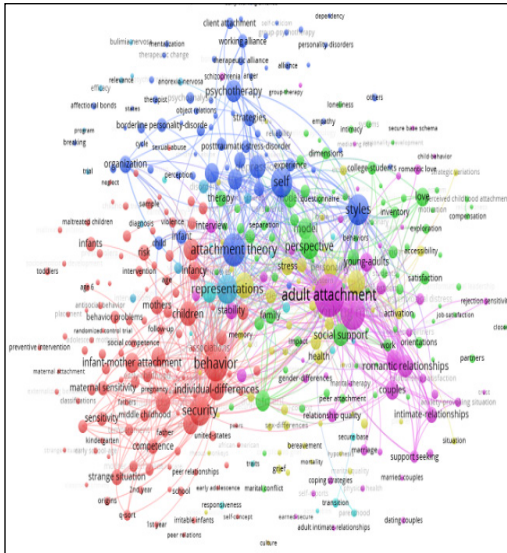


Figure 4. All keywords related to Attachment Theory

As it can be seen, “Adult attachment” and “Behavior” is the highest keyword being used in related to “attachment theory”.

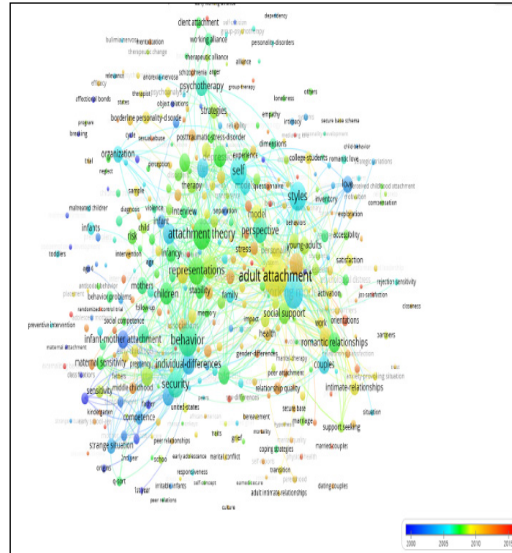


Figure 5. Time depended keywords related to Attachment Theory

As it can be seen, “adult attachment” is the most emerging keywords in recent years (from 2010) while “behavior” is one of the most decreasing keywords.

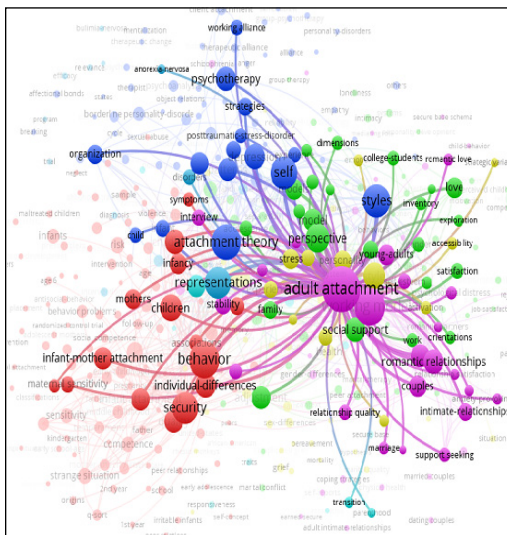


Figure 6. Keywords related to “Adult Attachment”

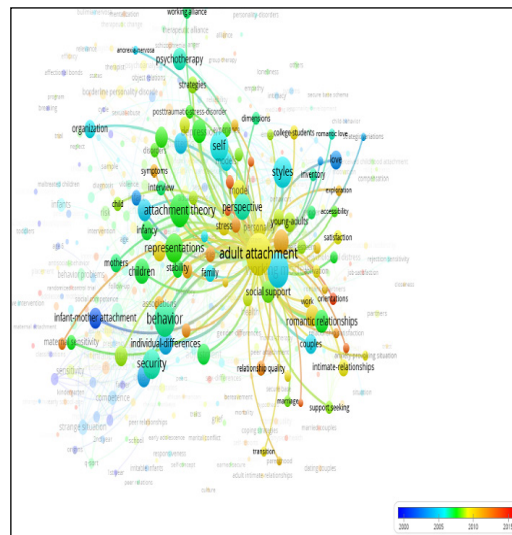


Figure 7. Time depended keywords connected to Adult Attachment

Figures 6 and 7. The time depended keywords connected to “adult attachment” shows that “Social Support”, “Romantic Relationship”, “children” are recent keywords and “intimate relationship”, “Stress”, “Representations”, “Model”, “Relationship Quality” and “orientation” are the emerging concepts and keywords in this area.





had 48 works, Shaver had 46 works, Van Ijzendoorn had 27 works, Simpson had 24 works, Fonagy had 22 works, and Rholes had 20 works; these are the most productive authors in “attachment theory” who have 20 or more works. Mikulincer and Shaver are the most productive scholars, together publishing 94 scientific documents related to attachment theory. While many of them are shared productions between Shaver and Mikulincer, they still have had highest contribution to the development of attachment theory, especially with books

like “Attachment in Adulthood, Structure, Dynamics, and Change” (Mikulincer & Shaver, 2007, 2017).

For qualitative content analysis, the data were sorted according to the average citation per year, and the top 20 documents were selected for qualitative content analysis. The top 20 papers received 8,065 citations (40.10% of total citations, 20,110). The average citation per year (ACPY) varied, from the maximum 50.24 to the minimum 14.64, within the top 20 documents. Figure 10, shows the trend of the top 20 papers.

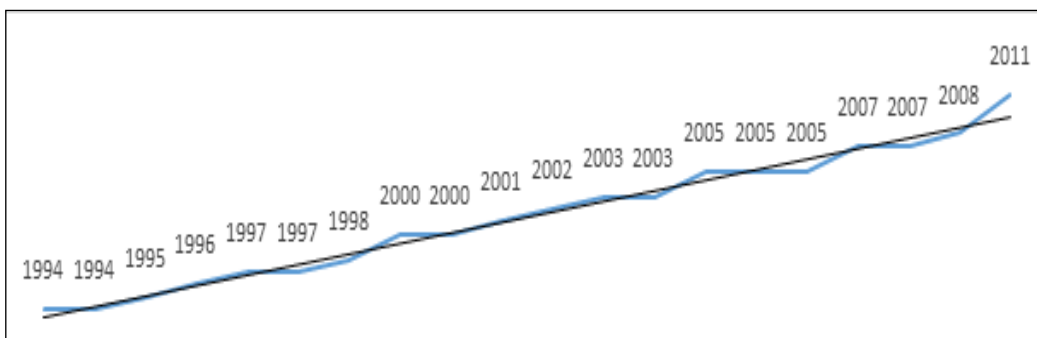


Figure 10. Trend of 20 top cited publication

Further insight can be gained from Table 2 which shows qualitative content analysis of the top 20 documents with the highest average citation per year (ACPY). According to this study, almost all 20 top cited productions were open access, with no restriction for the scientific community.

Table 2 shows the results of qualitative analysis of the top 20 documents with the highest average citation per year (ACPY). The most frequent variable of the impact of the publication was “attachment” in relation

with “adult”. Therefore, those publications which mainly focus on “Attachment theory” and regarding to adults’ issues such as “relationship”, “secure/insecure”, and “avoidance/anxiety”, get a substantial number of citations. On the other hand, reviews and meta-analysis documents are more likely to be cited than original research papers (Ebrahim et al., 2013). As such, the “review paper” and “meta-analysis” documents in this study appear to be a key strategy for getting more citations.

Table 2

*The highest cited documents sorted based on average citations per year*

NO.	Authors	Average per Year	OA/ NOP	Subject	Relation	Methodology
1	DeWolff & van Ijzendoorn (1997)	50.24	OA	Sensitivity & Attachment theory-	Parent and Child-	Meta-Analysis
2	Cook & Kenny ( 2005)	36.31	OA	Actor-Partner inter Dependent Model	Mother & Adolescent	Case Study
3	Mikulincer, Shaver, & Pereg (2003)	33.4	OA	Attachment theory and affect regulation	Adult relation ship	Review Paper
4	Davies & Cummings ( 1994)	32.5	OA	Marital conflict and child adjustment	Parent-child relation	Case study
5	Chorpita & Barlow (1998)	30.8	OA	Development of anxiety	Childhood and adult anxiety	Review Paper
6	Collins & Feeney (2000)	24.94	OA	Attachment theoretical framework on support seeking and caregiving	Couple/ adult intimate relationship	Case study
7	Waters, Merrick, Treboux, Crowell, & Albersheim (2000)	24.28	OA	Attachment security in infancy and early adulthood	Infant/early adulthood	Case study
8	Charuvastra & Cloitre (2008)	23.3	OA	Social bound and post-traumatic stress dis order	Childhood and adulthood	Review Paper
9	Dykas & Cassidy ( 2011)	21	OA	Attachment and the processing of social information	Childhood, adolescent and adulthood	Review Paper
10	Cicchetti & Toth (1995)	20.65	Non OA	Child abuse and neglect	child	Review Paper
11	Greenfield, Keller, Fuligni, & Maynard (2003)	20.4	OA	Cultural pathways through universal development	adolescent	Review Paper
12	Fraley ( 2002)	20.13	OA	Attachment stability infancy to adulthood	Infant -adulthood	Meta-Analysis
13	Campbell, Simpson, Boldry, & Kashy ( 2005)	20.08	OA	Perception of conflict and support in romantic relationship: the role of attachment theory	Adult/romantic relationship	Case study
14	Mickelson, Kessler, & Shaver (1997)	18.62	OA	Adult attachment	Adult attachment for extend theory	Case study
15	Mikulincer, Shaver, Gillath, & Nitzberg (2005)	18.38	OA	Attachment, caregiving and altruism	Adult /altruistic helping	Review Paper
16	Mikulincer & Shaver ( 2007)	18.27	OA	Boosting attachment security to promote mental health, values and inter group tolerance	Loving relation	Review Paper

Table 2 (*continue*)

NO.	Authors	Average per Year	OA/ NOP	Subject	Relation	Methodology
17	Simpson, Rholes, & Phillips (1996)	17.86	Non OA	Conflict in close relationship: attachment perspective	Adult relationship/ dating /couple	Case study
18	Shields & Cicchetti (2001)	15.82	Non OA	Parental maltreatment and emotion dysregulation as risk factors for bullying and victimization	Midle childhood	Case study
19	Cassidy & Berlin (1994)	14.88	Non OA	Insecure /ambivalent pattern of attachment	infant	Case study
20	Feldman & Ng (2007)	14.64	OA	Careers(management)	Adulr /career succed	Review Paper

The top journals who published the highest number of scientific documents related to “attachment theory” are illustrated in Figure 11. Quantity wise, journals with “Attachment Human Development” published 60 (3.52%) out of 1700 documents in the research area, followed by journals with “Infant Mental Health Journal”, with

38 (2.23%) documents, and journals with “Personality and Social Psychology”, with 36 (2.11%) documents. Qualitative wise, journals with Personality and Social Psychology published 5 (25.00%) documents out of the 20 top highest average citations per year (ACPY) documents.

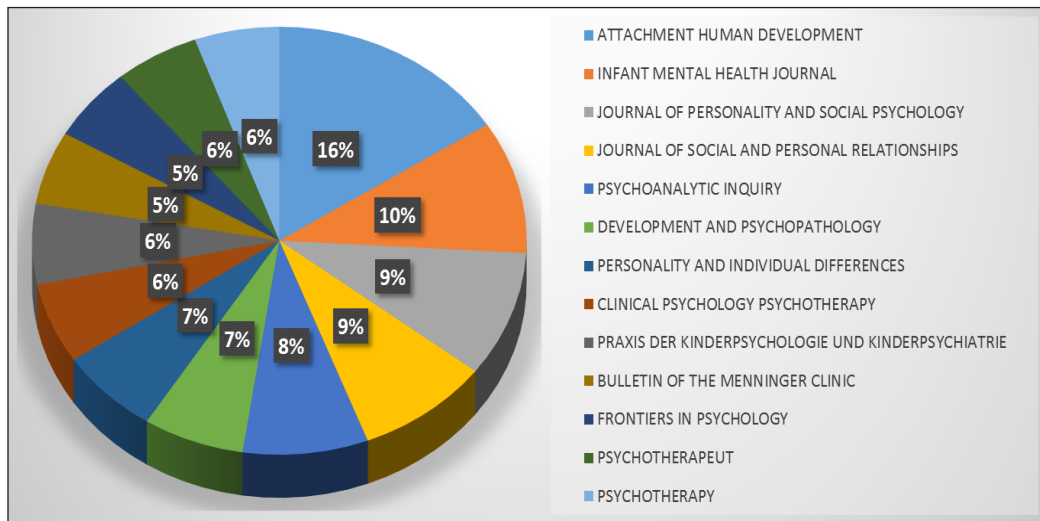


Figure 11. Top source of documents

## CONCLUSION

Based on this outcome, the authors realise that attachment theory is not restricted to psychology only, and in terms of world distribution of scientific productions, much is to be desired for the development of “attachment theory”. With the status of scientific outputs, the United States is the most productive country, in terms of number of publications indexed in the WoS from 1970-2017. This result shows that the scientific productivity in study is highly skewed. Even considering newly emerging countries, including Italy, Australia, China, Chili, Portugal, and Belgium, there is big question mark on the absence of many countries and regions like India, Central Asia, North and Middle Africa and Middle Eastern countries, where some of the countries in these regions such as Malaysia (Akhtari-Zavare, Ghanbari-Baghestan, Latiff, & Khaniki, 2015), and Iran (Akhtari-Zavare, Ghanbari-Baghestan, Latiff, Matinnia, & Hoseini, 2014). had many research developments in other related areas. This implies that despite worldwide usage of attachment theory, developing countries had less participation and contribution to the development of attachment theory.

The outcome of qualitative content analysis of the study demonstrates that even though publications with focuses mainly on concepts and keywords, like “attachment” in relation with “adult” and “infant-parent relationship”, will get a considerable number of citations. Yet research in attachment theory needs to

be encouraged to concentrate on newly emerging concepts and keywords, including “adult attachment”, “orientation”, “intimate relationship”, and “romantic relation”.

The study shows that attachment theory is a multidisciplinary approach that is not restricted to psychology. The more insights that come from different disciplines, the more comprehensive the study will be. This result suggests the need for further interdisciplinary research and practice collaboration, and will guide researchers to move beyond the sole psychological approach and realise the importance of multi-disciplinary approaches.

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