

# **TECHNOSTRESS: TRENDS AND CHALLENGES IN THE 21<sup>ST</sup> CENTURY KNOWLEDGE MANAGEMENT**

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## **Abstract**

Technostress is the trends and challenges of the librarians in the 21<sup>st</sup> century knowledge management. It is a modern disease of adaptation caused by an inability to cope with the new technologies in a healthy manner. It manifests itself in the struggle to accept technological innovations. The study sought to answer the following: what is the profile of the librarians; what is the level of technostress of librarians in terms of physical, emotional, behavioral, and psychological; and how did the librarians cope with technostress? The study employed descriptive survey method. This method seeks to ascertain respondents' perspectives on technology stress related in a predetermined structured manner. With the total of twenty nine (29) professional librarians who enrolled the MLIS program for second semester 2013-2014. Results showed that librarian is a female dominated profession. On the other hand, librarians are slightly affected physically by stress coming from the technology. Moreover, the coping strategies of librarians for physical aspects, despite the fact that librarians sometimes experienced to do exercise, do some deep breathing, and follow proper diet. However, the emotional aspects, the librarians often listen to music, and sometimes stay calm, maintain a sense of humor, talk with others or find a mentor to confide with, and meditate. In like manner, when it comes to behavioral aspects the librarians sometimes utilizes effective time management, establishes a teamwork relationship, and take a technology time-out and seldom do some job rotation. Thus, the psychological aspects, the librarians oftentimes realized that the only thing constant is change, and go with the flow. Every technological change or problem librarians have to deal with is an opportunity to learn something and balance positive and negative thoughts. Furthermore, stress influences human behavior whether in illness or in health and it is the body's nonspecific response to a demand placed on it.

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**Keywords:** Technostress, trends and challenges, 21<sup>st</sup> century knowledge management, level of technostress, and coping strategies

## **Introduction**

In the 21st century, the technological momentum has increased far beyond our expectations. People in today's society are living in a world full of demands. With many work and personal needs it is easy for librarians to feel overwhelmed. Technology was introduced as timesaver, but the convenience of technology has also raised expectations about what librarians can accomplish in the workplaces. Overall, librarians are projected to constantly restore their technical skills while keeping up with a relentlessly changing environment, even as maintaining a higher intensity of productivity. Vieitez, Carcia, & Rodriquez (2001) revealed that it is an incontrovertible fact that technology has become an essential part in the 21<sup>st</sup> century knowledge management. Technological revolution in any organization has not only improved efficiency but also helps reduce the predicament of tediousness in the workplace. Moreover, Murthy & Cholin (2003) illustrated the technological trends and challenges have also been a leading force in improving and enhancing library services. The application of library automation has immensely improved the effectiveness of library activities such as acquisition, circulation, cataloguing, reference, and serials control. In the same manner, Gorman (2001) presented the capacity of the libraries to offer access to digital and electronic information sources despite the consequences of location and immediate delivery of library services in terms of “virtual library”, “electronic library” or “digital library”.

The trends and challenges of technology have brought about increasingly intricate ways of doing transactions in the workplace. The fast changes of the new technology have caused businesses, industries, and government to initiate employees to rationalized and reorganized. The continuous introductions of technology in the work environment precise an individual value in the form of technology related stress or technostress. The changes have been thrust upon by the new information explosion, generations of information in a variety of forms. However, Van Fleet & Wallace (2003) dealt the continuous development of information technology and its application to library, information environment and changing of information needs of the library user. According to Laff (2006) that in the age of information technology and the timely dissemination of information has become significant to its value. This has resulted in the advancement of various mechanisms of providing appropriate and suitable information to library users. Technological innovations has modernized libraries and information services and has ended acquiring, processing, storing, retrieving

and utilizing of information in a large amount added to a well-organized environment.

Technostress in libraries were also found to stem out from organizational factor. For instance inadequate staff and insufficient number of printers, terminals, and work stations which caused the librarians to share equipments were more likely lead to frustration and avoidance. With the unsupportive climate where librarians perceived that their ideas were being ignored, their efforts going unnoticed, there were no rewards for professional development, or when the organizations' priorities were unclear, such factors would contribute to librarians being much less able to deal with technology and its demands. Consequently, Harper (2000) emphasized that there were two forms of technostress affecting librarians namely the physical and the psychological forms. The psychological forms of technostress suffered by librarians included feeling drained, information overload, over-identify with technology, under work, and doing routine jobs. In addition, the fear that computers were taking over their roles also led to feelings of job insecurity. There were also feelings of jealousy among librarians when their levels of technology competencies differed and resulted in the loss of motivation and team spirit. Spending so much time working with new technology also gave rise to feelings of job role uncertainty especially when librarians find themselves doing the job of systems librarians.

Currently, society is bombarded with what might be called the "mythology of stress", which suggests that one's psychological and physiological well-being is constantly threatened by degree of stress unparalleled in history. Thus, Ragu-Nathan, Tarafdar, Ragu-Nathan, and Tu (2008) presented that hasty look around us would tell that big and small events in our life cause stress. These are work overload, working conditions, time pressure, and promotion are just but a few instances of stressful events that people experience. The amalgamation of technology in every aspect of modern life, workplaces and working conditions has undergone profound changes. Librarians rely to a large extent on technology. However, technology also evokes negatively connoted opportunities. By obliterating space and time as formerly decelerating mediators, technology redefines the limitations of organizations. Thereby, it has the potential to shorten response times physically but also in the sense of social expectations.

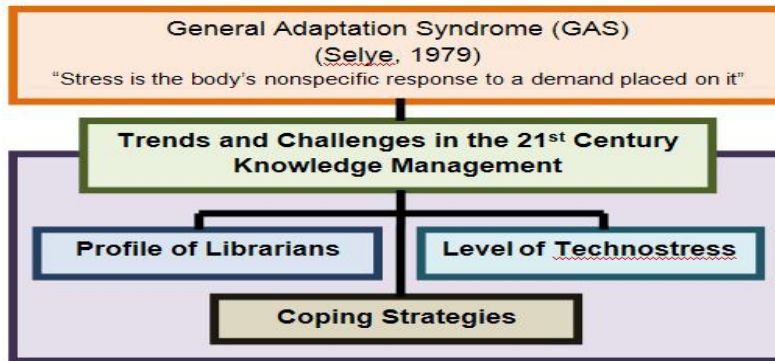
The phenomenon of the computer-related stress or "technostress" has attracted considerable attention among librarians. Technostress labeled by researchers with various terms like technophobia, cyberphobia, computerphobia, computer anxiety, computer stress, negative computer attitudes, and computer aversion. In the age of technology, computer is the fact of life. Cell phones, email, Internet, digital cameras, online banking and transactions, text messaging, laptops, blackberries; these items and services

have only been introduced over the past forty years yet, they have influenced our lives dramatically. Technostress is a feeling of anxiety or mental pressure from overexposure or involvement with (computer) technology (Flores, 2012).

Relevant research findings on technostress revealed by Ennis (2005) that there are six specific causes of technostress: (1) the rate of change of technology; (2) lack of standardization; (3) lack of training individuals on the equipment; (4) reliability of the technology; (5) increased workload placed on each individual; and (6) the changing roles of librarians. Moreover, she found out that librarians rated the first two as the strongest causes of technostress. Just as the librarians were getting used to one way of doing things, the technology advanced and they were forced to make changes as well. In addition, Bachiller (2001) dealt that the library staff suffer the so-called technostress. Library staff cited the following computer hassles like (1) lack of computer expertise; (2) lack of help with a computer problem; (3) slow program speed; (4) slow computer speed; and (5) increased time demands. It was indicated that the following are the most cited symptoms of technostress by the library staff like (1) back pains; (2) eyestrain; (3) headaches; (4) increased heart rate; (5) overexposure to visual display units; (6) loss of temper; and (7) unwillingness. Results showed that the library staffs have a “low level of technostress” in terms of emotional, behavioral and psychological factors and for physical factors have a “relatively fair amount of technostress”. In the same manner, Caguiat (2001) emphasized that respondents who are working in the reference and information service, circulation service and computer related activities stress appears more prevalent on this type of library work. In these workplaces, the most common manifestations of stress frequently experienced by the librarians under study were “backaches” and headaches”. Furthermore, Dimzon (2007) found out that technostress does harm to the physical, behavioral, and psychological aspects of the librarian while technostress does no harm to the librarian’s emotional aspects.

The graduate school students of Master in Library and Information Science (MLIS) program are practicing librarians in academic and school libraries. In this type of libraries, librarians are engaged with the latest technology to provide fast and better services to the library users. With this observation the researcher implied that librarians are experiencing different stage of technostress. Aside from that, the researcher has a regular conversation with the librarians during class session activities and sharing of individual experiences in their workplaces. During the conversation, the researcher heard some librarians’ physical complaints like backaches, eye strain, neck pain, stiff shoulder, and joint pains. Some said they too are suffering insomnia, anxiety, loss of temper, irritability, frustration and others.

## Framework of the Study



Selye (1979) revealed that General Adaptation Syndrome (GAS) effects of stress as the major cause of disease in the body as it struggles to maintain normal chemical balance. It is also a term used to describe the body's short-term and long-term reactions to stress. Stress is one cause of general adaptation syndrome. The results of unrelieved stress can manifest as fatigue, irritability, difficulty concentrating, and difficulty sleeping. Persons may also experience other symptoms that are signs of stress. Persons experiencing unusual symptoms, such as hair loss, without another medical explanation might consider stress as the cause. Moreover, people vary in their perceptions of stressors was reflected in his belief that the stressors themselves are less dangerous to health than people's maladaptive responses to them. Furthermore, Hans Selye categorized certain diseases, ranging from cardiovascular disorders to inflammatory diseases and mental disorders as "diseases of adaptation," regarding them as "largely due to errors in our adaptive response to stress" rather than the direct result of such outside factors as germs, toxic substances, etc.

## Objectives of the Study

The study aimed to determine the trends and challenges of technology related stress “technostress” among librarians in the 21<sup>st</sup> century knowledge management who enrolled in the Master in Library and Information Science (MLIS) at Cebu Normal University for second semester Academic Year 2013-2014. Specifically, it sought to answer the following: what is the profile of librarians; what is the level of technostress of librarians in terms of physical, emotional, behavioral, and psychological; and how did the librarians cope with technostress?

## Methodology

Descriptive survey method was used in the study. This method seeks to ascertain respondents' perspectives or experiences on technology stress

related in a predetermined structured manner. In this study, a total of twenty nine (29) professional librarians who enrolled the MLIS program for second semester 2013-2014. All the students of MLIS were the respondents and answered the survey questionnaires. The respondents were gathered together and discussed the purpose of this study. In the same event, the survey questionnaires were distributed and they were given enough time to answer the survey. The answered questionnaires were collected, tallied, interpreted, and analyzed using the percentage and weighted mean.

## Results and Discussions

### The Profile of Librarians

*The Profile of Librarians* refer to age, library experience, area of work, educational attainment, technology related and stress management trainings. Table 1 showed the profile of the 29 MLIS professionals who answered the survey. The age bracket of the respondents was below 25 and 25 to 34 years old. This implies that librarians (MLIS Professionals) in the 21<sup>st</sup> century are young, very active, energetic and infantile. However, librarians' profession is female dominated. This was due to the fact that this profession needs a systematic and methodical analysis, patience and dedication, which female have these characteristics. On the other hand, the table showed that majority of the librarians experienced was 1 year to 5 years. Data also revealed that majority of the respondents are fresh graduate in their baccalaureate degree. Consequently, librarians (MLIS Professionals) are exposing in the specific area of work in the reference and information services. These services are in the frontline services in the library, where the students usually ask the librarians regarding the needed information they consulted. However, majority of the respondents attended technology related trainings rather than the trainings on stress management.

Table 1. Profile of Librarians

Variables	Gender		Total
	Female	Male	
<b>Age:</b>			
Below 25 years old	12	1	13
25 to 34 years old	12	1	13
35 to 44 years old	2	0	2
Above 45 years old	1	0	1
<b>Library Experience:</b>			
1 to 5 years	20	2	22
6 to 10 years	4	0	4
11 years and above	3	0	3
<b>Area of Work:</b>			
Technical Services	10	1	11
Reference and Information Services	12	1	13
Library Management	5	0	5

<b>Educational Attainment:</b>			
<b>Undergraduate Studies:</b>			
Bachelor in Library and Information Science	18	2	20
BSED major in Library Science	6	0	6
AB major in Library Science	3	0	3
<b>Graduate Studies:</b>			
With MA Units (Master in Library and Information Science)	13	2	15
<b>Technology Related Training:</b>			
Attended	20	1	21
Not Attended	7	1	8
<b>Stress Management Training:</b>			
Attended	8	2	10
Not Attended	19	0	19

### **The Level of Technostress of Librarians in terms of Physical, Emotional, Behavioral, and Psychological**

#### *Level of Technostress of Librarians in terms of Physical Aspects.*

Table 2 revealed that most of the respondents can sometimes experienced eye strain, backaches, headaches, stiff shoulder, and neck pain in doing their work. This is due to the fact that most of their works are done through sitting and facing the computers for a longer time and resulted into physical strain. The physical work environment in which the library staff must spend eight and more hours a day is critical to their security, job satisfaction, and increasingly their health. In a technological world, providing library personnel with an appropriate and safe physical environment is necessity. On the other hand, the librarians seldom experienced are joint pain, dry mouth and throat, muscle tension, stomach discomfort, and keyboard related injuries. Furthermore, the librarians never experienced chest pain, rapid heart rate, irritable bowel syndrome, increased blood pressure and difficulty in breathing. In general, librarians are just somewhat physically affected by the stress coming from the technologies in their work.

Table 2. Level of Technostress of Librarians in terms of Physical Aspects

<b>Physical Aspects</b>	<b>WM</b>	<b>Verbal Interpretation</b>
Eye strain	3.38	Sometimes
Backaches	3.10	Sometimes
Headaches	3.00	Sometimes
Stiff shoulder	3.00	Sometimes
Neck pain	2.93	Sometimes
Joint pain	2.28	Seldom
Dry mouth and throat	2.24	Seldom
Muscle tension	2.17	Seldom
Stomach discomfort	2.07	Seldom
Keyboard related injuries	1.86	Seldom
Chest pain	1.69	Never
Rapid heart rate	1.66	Never

Irritable bowel syndrome	1.62	Never
Increased blood pressure	1.55	Never
Difficulty in breathing	1.45	Never
<b>Average Weighted Mean</b>	<b>2.27</b>	<b>Seldom</b>

Scale	Verbal Interpretation
4.21-5.00	Always
3.41-4.20	Often
2.61-3.40	Sometimes
1.81-2.60	Seldom
1.00-1.80	Never

***Level of Technostress of Librarians in terms of Emotional Aspects.***

Table 3 showed the level of technostress of the librarians in terms of emotional aspects. Despite the fact that exposure to computer monitors is associated with emotional stress, the librarians were slightly emotionally affected by the technostress in their workplace. Most of the respondents seldom experienced irritability, loss of temper, having high state of anxiety when separated from computer, feeling of indifference and frustration. On the other hand, they never experienced lack of appreciation, depression, guilt, feeling fearful, paranoia that leads avoiding to computers, and negative attitude towards computers. It was observed that the librarians were already used to computers as part of their professional work and computer related problems are always handled by computer technicians and not the librarian themselves.

Table 3. Level of Technostress of Librarians in terms of Emotional Aspects

<b>Emotional Aspects</b>	<b>WM</b>	<b>Verbal Interpretation</b>
Irritability	2.38	Seldom
Loss of temper	2.17	Seldom
Having high state of anxiety when separated from computer	2.07	Seldom
Feelings of indifference	1.93	Seldom
Frustration	1.90	Seldom
Lack of appreciation	1.69	Never
Depression	1.66	Never
Guilt	1.66	Never
Feeling fearful	1.66	Never
Paranoia that leads to avoiding computers	1.45	Never
Negative attitude	1.35	Never
<b>Average Weighted Mean</b>	<b>1.81</b>	<b>Seldom</b>



***Level of Technostress of Librarians in terms of Behavioral Aspects.***

Table 4 showed the behavioral aspect of the respondents. Results revealed that librarians never affected by the technostress as far as uncooperativeness or unwillingness, using computer terms in non-computer conversation, smoking, social withdrawal in favor of terminal time, cruising computer stores, and drinking alcohol are concerned. Though the respondents seldom experienced insomnia, and sometimes experienced in overly comfortable with computers and overspending on computers. The average weighted mean of 1.97 suggests that the librarians were not affected or seldom experienced technostress in the aspect as mentioned. This implies that most of the respondents of this study are still adapting the advancement of technology.

Table 4. Level of Technostress of Librarians in terms of Behavioral Aspects

<b>Behavioral Aspects</b>	<b>WM</b>	<b>Verbal Interpretation</b>
Overly comfortable with computers	2.97	Sometimes
Overspending on computers	2.83	Sometimes
Insomnia	1.97	Seldom
Uncooperativeness or unwillingness	1.80	Never
Using computer terms in non-computer conversion	1.80	Never
Smoking	1.80	Never
Social withdrawal in favor of terminal time	1.72	Never
Cruising computer stores	1.41	Never
Drinking Alcohol	1.24	Never
<b>Average Weighted Mean</b>	<b>1.97</b>	<b>Seldom</b>

***Level of Technostress of Librarians in terms of Psychological Aspects.***

Table 5 found out that the level of technostress of the MLIS Professionals in terms of psychological aspects revealed that librarians seldom experienced underworked and routine jobs that lead to frustrations when underemployed or when the work done involves only routine operations, job insecurity, where librarians have a fear that a computer may replace human roles, professional jealousy produced by technological competency, demotivation due to prolonged period of any technological activity, and uncertainty about job role caused by an increased time working with new technology but sometimes experienced information overload to find, analyze, evaluate, and apply it in right context of resources. In general, librarians were slightly stressful in terms of psychological effect of technostress.

Table 5. Level of Technostress of Librarians in terms of Psychological Aspects

<b>Psychological Aspects</b>	<b>WM</b>	<b>Verbal Interpretation</b>
Information overload to find, analyze, evaluate, and apply it in right context of resources	2.69	Sometimes
Underwork and routine jobs lead to frustrations when underemployed or when the work done involves only routine operations	2.28	Seldom

Job security, where librarians have a fear that computer may replace human roles	2.03	Seldom
Professional jealousy produced by technological competency	1.97	Seldom
Demotivation due to prolonged period of any technological activity	1.97	Seldom
Uncertainty about job role caused by an increased time working with new technologies	1.82	Seldom
<b>Average Weighted Mean</b>	<b>2.13</b>	<b>Seldom</b>

### **Coping Strategies of Librarians in Terms of Physical, Emotional, Behavioral, and Psychological Aspects.**

#### ***Coping Strategies of Librarians in Terms of Physical Aspects.***

Table 6 revealed that the librarians never experienced to perform yoga or Tai Chi, and buy ergonomic equipments or furniture or learn more about ergonomics. However they seldom experienced progressive muscle relaxation, and take frequent breaks. Despite the fact that librarians sometimes experienced to do exercise, do some deep breathed, and follow proper diet. In general, librarians seldom perform some physical strategies thus the effect of technostress physically was just slight. In the same manner, physical technostress coping strategies, librarians ranked exercise, deep breathing, stay healthy and proper diet as the most important coping strategy in terms physical, followed by progressive muscle relaxation, buy ergonomic equipment or furniture or learn more about ergonomics and take frequent breaks respectively. They ranked performing yoga or tai-chi as the least important in coping physical stress.

Table 6. Coping Strategies of Librarians in Terms of Physical Aspects

<b>Physical Aspects</b>	<b>WM</b>	<b>Verbal Interpretation</b>	<b>Rank</b>
Exercise	2.86	Sometimes	1
Deep breathing	2.62	Sometimes	2
Stay Healthy and proper diet	2.62	Sometimes	2
Progressive muscle relaxation	2.52	Seldom	3
Take frequent break	2.41	Seldom	4
Buy ergonomic equipment or furniture or learn more about ergonomics	1.35	Never	5
Yoga or Tai Chi	1.10	Never	6
<b>Average Weighted Mean</b>	<b>2.21</b>	<b>Seldom</b>	

### **Coping Strategies of MLIS Professionals in Terms of Emotional Aspects**

Table 7 dealt that librarians often listen to music, and sometimes stay calm, maintain a sense of humor, talk with others or find a mentor to confide with, and meditate. Moreover, they seldom do some counseling, and join a club where people with similar interests meet and discuss common interests and hobbies. These are indications that the respondents were able to establish a good emotional habit in them and to others. But in general, librarians

would just sometimes perform these activities occasionally. Thus, librarians coping strategies in terms of emotional, they ranked listening to music as the most important.

Table 7. Coping Strategies of Librarians in Terms of Emotional Aspects

<b>Emotional Aspects</b>	<b>WM</b>	<b>Verbal Interpretation</b>	<b>Rank</b>
Listening to music	3.55	Often	1
Stay calm	3.35	Sometimes	2
Maintain a sense of humor	3.28	Sometimes	3
Talking with others or find mentor to confide you	2.93	Sometimes	4
Meditation	2.72	Sometimes	5
Counseling	2.59	Seldom	6
Join a club where people with similar interests meet and discuss common interests and hobbies	2.10	Seldom	7
<b>Average Weighted Mean</b>	<b>2.93</b>	<b>Sometimes</b>	

### **Coping Strategies of Librarians in Terms of Behavioral Aspects.**

Table 8 revealed that librarians sometimes utilizes effective time management, establishes a teamwork relationship, and take a technology time-out and seldom do some job rotation. In general, librarians sometimes indulged in such behavioral enhancement activities. On the other hand, the librarians ranked the utilized effective time management and established a teamwork relationship as the most important coping strategies in behavioral aspects.

Table 8. Coping Strategies of MLIS Professionals in Terms of Behavioral Aspects

<b>Behavioral Aspects</b>	<b>WM</b>	<b>Verbal Interpretation</b>	<b>Rank</b>
Use effective time management	3.07	Sometimes	1
Establish a teamwork relationship	3.07	Sometimes	2
Take a technology time-out	2.66	Sometimes	3
Job rotation	2.52	Seldom	4
<b>Average Weighted Mean</b>	<b>2.83</b>	<b>Sometimes</b>	

### **Coping Strategies of Librarians in Terms of Psychological Aspects**

Table 9 showed that librarians oftentimes realized that the only thing constant is change, and go with the flow. Every technological change or problem librarians have to deal with is an opportunity to learn something and balance positive and negative thoughts. As reflected on the table, they sometimes do some positive self talk and recognize that technostress is natural, keep learning, attend workshops and continuing education and share knowledge with colleagues, increased technology-based training, accept that occasionally the source will be missed in responding to a research request, and aware of technostress and its level. They never experienced psychological technostress because they often indulged into psychological coping strategies.

Table 9. Coping Strategies of Librarians in Terms of Psychological Aspects

Psychological Aspects	WM	Verbal Interpretation	Rank
Realize that the only thing constant is change, and go with the flow. Every technological change or problem we have to deal with is an opportunity to learn something	3.62	Often	1
Balance positive and negative thoughts	3.52	Often	2
Positive self talk and recognize that technostress is natural	3.10	Sometimes	3
Keep learning, attend workshops and continuing education, share knowledge with colleagues	3.10	Sometimes	3
Increase technology based-training	3.00	Sometimes	4
Accept that occasionally a source will be missed in responding to a research request	2.93	Sometimes	5
Awareness of technostress and its level	2.90	Sometimes	6
<b>Average Weighted Mean</b>	<b>3.17</b>	<b>Sometimes</b>	

## Conclusion

Technostress is the trends and challenges of the librarians in the 21<sup>st</sup> century knowledge management. It is also the apprehension and the pessimistic impact on thoughts, behaviors, attitudes, and body when a person is expected to deal with technology. The technological uprising has certainly brought along many changes in the workplaces today. Although it has allowed work to be carried out faster and more efficient, many employees are not comfortable with the implementation of technology as it involves change and uncertainty. The physical strain experienced by the librarians such as eye strain, backaches, headaches, stiff shoulder and neck pain in doing their work. Although they are slightly affected physically by stress coming from the technologies in their work, this was affirmed by Selye's theory that stress influences human behavior whether in illness or in health and it is the body's nonspecific response to a demand placed on it.

## Recommendations

From the findings of the study, the researcher recommended the following: a periodic assessment is necessary to check the level of technostress affecting the librarians especially the physical, behavioral and psychological aspects; knowledge managers should organize technology-based trainings for librarians to make them comfortable with new technologies; librarians may update technological skills continuously; libraries need to employ qualified information and technology specialist to maximize system accessibility; a Stress Management Activities is designed to lessen or possibly eliminate the problem; and another research on technostress for further studies.

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