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Research on the Impact of Health and Attitudes towards Older Adults on Individual Concerns about Aging

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Abstract: This paper employs structural equation modeling analysis to illustrate the specific mechanisms by which an individual's overall health level and attitudes toward older adults influence aging concerns for older adults aged 50 to 79 years. The study found that an individual's current health status significantly affects the level of aging concerns. Psychological status plays an important mediating role, with a relatively limited effect on differences in attitudes toward older adults.

1. Introduction

The concept of aging concerns is often included in existing research as aging anxiety or concerns about aging. Unlike anxiety symptoms in older adults, aging concerns should refer to concerns about a range of consequences of further aging in the future, rather than psychological symptoms at the time of testing. Aging concerns, as a consideration of future conditions, are based on individual realities and are also moderated by sociocultural conditions at the macro level.

Current research has mostly used the Aging Anxiety Scale (AAS) designed by Lasher and Faulkender to measure individuals' concerns about aging which focuses on four dimensions:[1] fear of older adults, psychological concerns, physical appearance and fear of losses. However, the design lacked a future-oriented threat component and was less effective in measuring anxiety about further aging in older adults, on which basis Watkins et al modified most of the scale's questions to be future-oriented hypotheses or scenarios of a highly aging state,[2] with a view to making it applicable to a broader group of people, including those who are already aging. In this way, aging concerns can, on the one hand, reflect current issues, with the individual's physical and mental state and the attitudes of society as a whole influencing the individual's estimation of the future. On the other hand, aging concerns can have a profound impact on individual development, with concerns about the future potentially altering the individual's behaviors and attitudes toward life, further deepening or weakening the sources of those concerns.

2. Literature review

2.1 Physical and Mental Health Impact on Aging Concerns

Despite the relevance of different aging concerns related studies, health concerns have always been

one of the most important dimensions in all research designs. Studies have shown that individuals' aging concerns are related to aging physical status and negative psychological states,[3] that a better level of physical health reduces individuals' aging anxiety levels, and that this effect is particularly significant in the 40+ age group.[4] And studies in middle-aged populations have found that declining levels of self-efficacy and health can also lead to higher levels of aging concerns.[5] In developed countries, such as the United States, weakened physical health of the population is one of the most important factors contributing to the general increase in the level of aging concerns,[6] and this finding also holds true in developing countries, such as Colombia.[7] In addition, a good state of mind in the individual ameliorates anxiety and worry about further aging, the latter often being highly correlated with an individual's psychological distress and attitudes toward the meaning of life.[3]

2.2 Attitudes toward Older Adults Impact on Aging Concerns

The term "attitudes toward older people," also known as "general aging attitudes," refers to an individual's comprehensive view of the social status and value of older people. This concept focuses on general social attitudes toward older people, as outlined in reference.[8] Given that the conventional notion of attitudes towards aging encompasses attitudes towards one's own functional aging, the text employs the term "attitudes towards older adults" to denote the social connotations associated with attitudes towards aging, thus circumventing potential ambiguity. From a psychological perspective, attitudes toward aging are seen as a reflection of an individual's psychological state. Research has consistently demonstrated that attitudes toward the elderly are significantly influenced by an individual's psychological well-being and life satisfaction.[9] Tang Dan et al.'s survey of Chinese older adults revealed that this kind of attitude are largely shaped by an individual's psychological and life satisfaction, rather than by demographic characteristics.[10] The social dimension of attitudes toward older people is influenced by a variety of factors, including role expectations, intergroup relations, differences in economic status and family relationships.[11]

Individuals' attitudes toward the elderly may influence their perspectives and concerns about their own future aging. For example, Donizzetti's study found an association between negative attitudes toward the elderly and aging concerns.[12] Similarly, McConatha found the co-occurrence of discrimination against the elderly and their own aging concerns in Germany and the United States.[13] Additionally, a study in Colombia found that negative stereotypes of the elderly significantly increased anxiety about aging.[7]

3. Hypothesis Development

The issue of aging concerns has not been well discussed in China. The aging concerns of middle-aged and elderly people in China may exhibit commonalities with other populations, yet they also possess distinctive characteristics due to factors such as the traditional gender division of labor in China. This paper will link the aging concerns of China's middle-aged and elderly population with four dimensions: physical health, mental health, attitudes toward the elderly and attitudes toward the elderly, exploring the mechanisms of their influence. Additionally, it will examine the moderating effect of gender and age differences on these mechanisms.

3.1 Defining the Scope of the Study Population

In this paper, the research targets are middle-aged people aged 50-59 and senior people aged 60-79, in order to broaden the research horizons of previous studies that only focus on young people or old people, and at the same time, adapt to the situation that senior people in China generally retire at the age of 50-65 years.

3.2 Direct Effects to Aging Concerns of Multiple Health

In terms of direct pathways of influence, the previous section has presented the results of many studies in the literature where an individual's level of physical health, psychological state, and attitudes toward the older adults are negatively related to aging concerns. Therefore, we expect that:

A1: Middle-aged and elderly people with better physical and cognitive health have lower levels of aging concerns.

A2: Middle-aged and elderly people with better mental health status have lower levels of aging concerns.

A3: Middle-aged and elderly people with more positive attitudes toward the older adults have lower level of aging concerns.

3.3 Direct Effects to Attitudes toward the Dlder Adults of Multiple Health

Although an individual's attitudes toward older adults can be presented both as stable psychological states and as primarily shaped by social factors, some empirical studies have argued that they are more conditioned by an individual's physical and mental state, i.e., that differences in current health status explain to some extent differences in an individual's expectations about his or her future state, and that older adults who are depressed, and dependent on daily activities hold more negative attitudes toward aging. Therefore, we expect that:

B1: Middle-aged and elderly people with better physical and cognitive health have more positive attitudes toward the older adults.

B2: Middle-aged and elderly people with better mental health have more positive attitudes toward the older adults.

3.4 Mediation Hypotheses

Mental health and attitudes toward older adults may mediate the relationship between an individual's physical and cognitive health and aging concerns. In terms of mental health, existing research has found that an individual's mental state is positively correlated with their physical health, ability to perform daily activities, and cognitive ability,[14,15] and some scholars have also pointed out that mental health partially mediates the effect of physical health on life satisfaction.[16] Therefore, we argues that it is necessary to consider whether an individual's mental health may play a mediating role in the influence of physical health on aging concerns.

Second, more positive attitudes toward aging may play a protective role for the elderly, whereas negative attitudes toward aging may have disastrous consequences. For example, individuals' perceptions of their own age tend to elicit more negative emotions, but positive attitudes toward older adults may play a buffering role.[17] In the face of one's own health and physical decline, holding more positive attitudes toward aging may also reduce anxiety. It is also worth exploring whether individuals' attitudes toward older adults mediate the effects of physical and mental health on aging concerns.

Therefore, we expect that:

C1: Individuals' physical and cognitive health may further contribute to aging concerns by influencing mental health.

C2: Individuals' physical, cognitive, and mental health will further contribute to aging concerns by influencing their attitudes toward older adults.

4. Methodology

4.1 Data Collection

The survey data used in this paper come from the China General Social Survey (CGSS) 2021 database of the China Survey and Data Center of Renmin University of China, which uses a sampling method to survey more than 10,000 households nationwide. The database covers all age groups, and also includes the East Asian Social Survey (EASS) module and the first-ever measurement of 'aging concerns', thus meeting the research needs of this paper. After retaining the valid samples from the EASS module, screening out the "peri-elderly" age group of 50-59 years and the "low- and middle-aged elderly" age group of 60-79 years, and deleting a very small number of samples with missing values, a final valid sample of 1,392 samples was obtained.

4.2 Construct Measures

Table 1: Variable Settings.

Dimensions	Variable Names	Questionnaire Details
Aging Concerns	Self-care Concerns(SCC)	I'm afraid I won't be able to take care of myself when I'm old.
	Decision-making Concerns(DMC)	I'm afraid that when I'm old I'll have to let someone else make my decisions for me.
	Financial Concerns(FC)	Being financially dependent on others is one of my biggest fears about growing old.
Physical Health	General activities ability(GAA)	General activities such as moving tables, using the vacuum cleaner, bowling or golfing.
	Climbing ability(CLA)	Ability to climb several floors.
	Daily stamina ability(DSA)	Unable to perform expected work or daily activities due to health problems.
	Working ability(WA)	To what extent has the illness interfered with your normal work functioning in the last four weeks.
Cognitive Health	Reading ability(RA)	How often you need someone to help you when you read doctor's written materials.
	Comprehension ability(COA)	Unable to understand your health condition because you don't understand the instructions.
	Articulation ability(AA)	Lack of clarity about your health because you don't know how to ask questions of healthcare professionals.
	Reading Without Barriers(RWB)	Can't read drug instructions or medical advice
Mental Health	Emotional Stability(ES)	You are unable to perform expected work or daily activities due to emotional problems.
	Emotionally Focused(EF)	Being distracted from work or other daily activities due to emotional issues.
	Feel Peaceful(FP)	Do you feel peace of mind?
Attitudes Toward the Older Adults(ATOA)	Substance Acquisition(SA)	Older people get more from the government than they deserve.
	Social Burden(SB)	Older persons are a burden on society.
	Influence(IF)	Older people have too much political clout.

As the items included in the questionnaire are not entirely consistent with previous research on the concepts involved, and thus require validation to ascertain the feasibility of the measurements, this paper employs structural equation modelling (SEM) and selects a total of 17 variables, as detailed in

Table 1, to measure the five dimensions in question, with all values' directions adjusted to be positive.

4.3 Sample Demographics

Table 2: Sample demographics of aging concerns (%)

	Self-care Concerns			Decision-making Concerns			Financial Concerns			
	No Concerns	Neutral	Have Concerns	No Concerns	Neutral	Have Concerns	No Concerns	Neutral	Have Concerns	N
Gender										
Female	18.06	9.85	72.09	29.14	16.28	54.58	33.52	14.09	52.39	731
Male	27.23	8.47	64.3	36.91	13.16	49.92	40.85	12.25	46.9	661
Age										
50-59	19.55	9.5	70.95	32.4	14.15	53.45	34.45	14.15	51.4	537
60-69	23.55	8.78	67.66	33.13	15.17	51.7	34.13	13.77	52.1	501
70-79	25.14	9.32	65.54	33.05	15.25	51.69	44.92	11.02	44.07	354
Ethnic										
Han	23.06	9.16	67.78	33.15	14.52	52.33	37.73	12.66	49.61	1288
Minority	14.42	9.62	75.96	28.85	18.27	52.88	27.88	20.19	51.92	104
Education										
Elementary and elow	23.02	8.37	68.61	30.49	14.35	55.16	31.99	12.11	55.9	669
Junior high school	20.39	10.07	69.53	34.89	14	51.11	35.38	15.48	49.14	407
Senior high school	23.15	8.33	68.52	36.57	15.28	48.15	46.76	13.43	39.81	216
University and above	25	13	62	32	20	48	56	11	33	100
Marriage										
non-married	19.86	9.76	70.38	30.66	16.72	52.61	33.45	14.63	51.92	287
Married	23.08	9.05	67.87	33.39	14.3	52.31	37.92	12.85	49.23	1105
Number of children										
Only one child or no child	21.36	9.58	69.06	32.14	16.77	51.1	37.33	16.37	46.31	501
Two or more children	23.01	8.98	68.01	33.22	13.69	53.09	36.81	11.45	51.74	891
Whether living with children										
Not living with children	23.34	8.86	67.8	32.75	14.76	52.49	37.45	13.47	49.08	1084
Living with children	19.16	10.39	70.45	33.12	14.94	51.95	35.39	12.34	52.27	308
City or rural										
Rural	22.98	7.74	69.28	31.99	13.05	54.97	31.52	11.78	56.7	866
City	21.48	11.6	66.92	34.22	17.68	48.1	46.01	15.59	38.4	526
Region										
Eastern region	24.35	7.85	67.81	35.61	13.08	51.31	38.23	10.87	50.91	497
Central region	22.99	11.03	65.98	31.78	16.64	51.59	41.12	13.27	45.61	535
Western region	18.89	8.33	72.78	30.56	14.44	55	29.17	16.39	54.44	360

In general, the aging concerns of the middle-aged and the elderly in China are pronounced. Among the three dimensions of aging concern, the percentage of those who have concerns is above 50%. Furthermore, the difference in financial concerns is greater than that of self-care and decision-making concerns among different groups. However, the overall level of self-care concerns is higher than that of decision-making and concerns. This indicates that the concerns of the elderly in China about aging

are primarily related to self-care ability, while concerns about future financial ability are more significantly influenced by individual, family, and environmental characteristics. Table 2 shows the discrepancies in the three dimensions of aging concerns across individuals, families, and regions.

With regard to individual characteristics, women exhibit significantly elevated levels of all three dimensions of concerns relative to men. Older groups have lower levels of concerns than younger groups, with the most pronounced discrepancies observed in financial concerns, followed by self-care concerns, and the smallest differences in decision-making concerns. The discrepancy between groups with disparate levels of education is particularly pronounced. The percentage of middle-aged and elderly individuals with a university education or above who report self-care concerns and decision-making concerns is 6.61% and 7.16% lower, respectively, than those with an elementary school education or below. Moreover, the percentage of those who report financial concerns is even lower by 22.90%. These findings indicate that human capital plays a significant role in influencing individuals' aging concerns. Furthermore, married Han Chinese individuals in middle age and old age exhibit slightly diminished levels of all three types of concerns relative to their non-married ethnic minority counterparts.

Differences in the family characteristics of aging concerns are not obvious, with slightly higher levels of financial concerns among those with two or more children, while the differences in the other two dimensions of concerns are small and inconsistent, probably because those with more children are more likely coming from areas with lower levels of development, where Family Planning is less vigorously enforced and thus individual economic levels are lower.

In terms of geographical characteristics, the levels of the three dimensions of concern among urban samples are lower than those from rural areas, and the difference in financial concerns is huge, with a difference of as much as 18.30% in the proportion of those who 'have concerns'. The levels of the three dimensions of concern among samples are highest in the western region, followed by the eastern region, and the central region has the lowest level of concern in general.

5. Results

5.1 Exploratory Factor Analysis

An exploratory factor analysis was conducted on all the aforementioned variables. The KMO measure of sampling adequacy was 0.831, and the Bartlett sphericity test was significant (P = 0.000), indicating that there is likely to be a substantial amount of shared information and common factors within these variables, rendering them suitable for factor analysis and structural equation modelling. As the dependent variable, the dimension of "aging concerns" contains three variables. The principal component analysis (PCA) extracted a common factor with a loading of 66.059%. The variables "self-care concerns," "decision-making concerns," and "financial concerns", which compose the factor "aging concerns", have loadings of 0.804, 0.836, and 0.798 respectively. It indicates that these three variables can explain the "aging concerns," which reflects older individuals' concerns about aging.

The preceding section presumed the existence of four dimensions of the independent variables: physical health, cognitive health, mental health, and attitudes toward older adults. But it is necessary to ascertain whether these variables can be classified in accordance with the presuppositions set and whether the correlations between the variables under the different dimensions are mutually exclusive. This require discerning the common factors among the 14 independent variables and assessing their respective loadings. The results demonstrate that the eigenvalues begin to decline below 1 when the fifth factor is extracted, and the cumulative factor loadings when the extracting four factors reach 65.229% (>60%). This suggests that extracting four factors is a more appropriate approach and may offer a more robust explanation.

The rotated component matrix, generated using Kaiser's normalized maximum variance method,

effectively assigns the 14 variables to the four common factors. The loading of each variable under its respective common factor are all higher than 0.6, and the correlation matrix among the factors demonstrates that the four common factors do not entrain correlated information with each other. This indicates that there is clear share information among the variables under the same common factor, with no interference between them.

5.2 Common Method Result

5.2.1 Direct Effects Affecting Aging Concerns

This paper develops a structural equation model, as shown in Figure 1, according to the research hypotheses. First, aging concerns are closely related to an individual's comprehensive health status, which may be directly affected by physical health, cognitive and mental health. Second, attitudes towards older adults are also a possible factor affecting aging concerns. Thirdly, one's own comprehensive health status may also affect attitudes towards older adults, so that physical health, cognitive and mental health may influence an individual's attitudes towards older adults, which in turn have an impact on aging concerns. Finally, mental health itself is influenced by physical and cognitive health, so there is also a possible pathway of mediating effects.

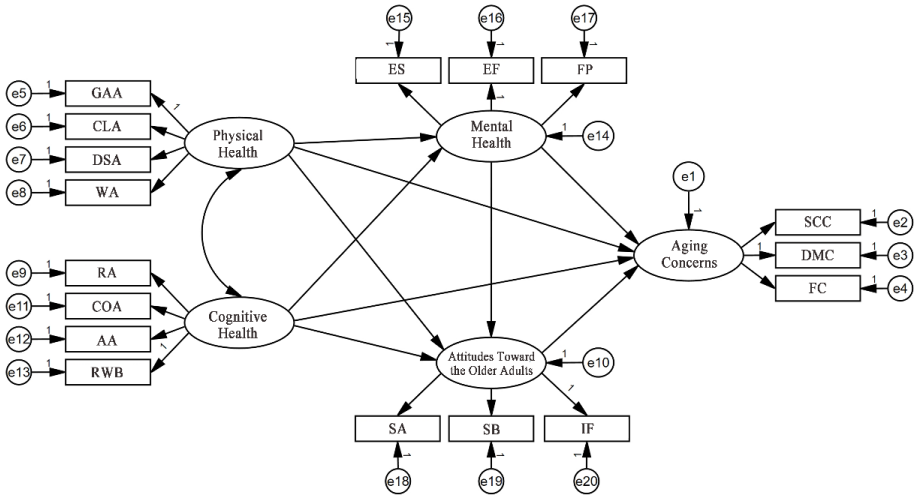

Figure 1: Structural equation modelling diagram.

Based on the experience of previous studies, a well-fitted structural equation model should have multiple goodness of fit index of CFI ≥ 0.90, TLI ≥ 0.90, RMSEA ≤ 0.08, and SRMR ≤ 0.10. The model used in this paper was tested and the results showed a good fit (CFI = 0.937; TLI = 0.921; RMSEA = 0.060; SRMR = 0.044), all goodness of fits meets the requirements.

As presented in Figure 2, the mental health of middle-aged and elderly people in China is influenced by both physical and cognitive health, and for every level of higher physical and cognitive health, mental health is increased by 0.628 and 0.103 level, respectively, showing that the influence of physical health on mental health is much greater than that of cognitive health, and both are statistically significant. Attitude towards older adults is not affected by physical and cognitive health, and is only positively affected by mental health, which to some extent proves that attitude towards older adults is a more stable refraction of mental state. Hypothesis B2 is confirmed, while hypothesis B1 is not.

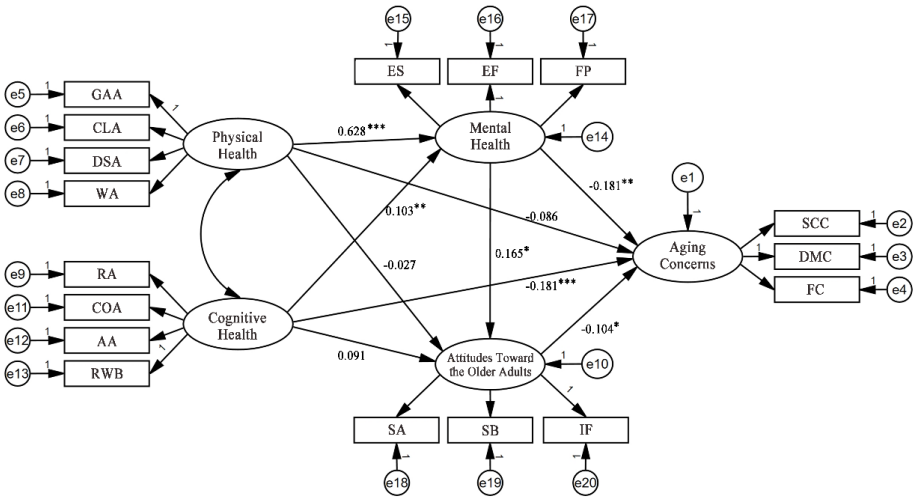

Figure 2: Structural equation modelling results diagram.

Better mental health and cognitive health are effective in reducing aging concerns, with each level higher of both reducing aging concerns by 0.181 units each, which is a significant correlation. More positive attitudes toward older adults also reduce aging concerns and are significant correlated at the 95% confidence intervals. Hypotheses A2 and A3 are both supported. Good physical health also reduces aging concerns, but this effect is not statistically significant, suggesting that only aging concerns reduces aging concerns, and thus hypothesis A1 is only partially supported.

5.2.2 Mediating Role of Mental Health and Attitudes toward Older Adults

Table 3: Standardized SEM results.

Direct Effect	Std. estimates	
Physical health→Aging concerns	-0.086	
Cognitive health→Aging concerns	-0.181	***
Mental health→Aging concerns	-0.181	**
ATOA→Aging concerns	-0.104	*
Physical health→Mental health	0.628	***
Cognitive health→Mental health	0.103	**
Physical health→ATOA	-0.027	
Cognitive health→ATOA	0.091	
Mental health→ATOA	0.165	*
Indirect Effect		
Physical health→Mental health→Aging concerns	-0.114	**
Physical health→ATOA→Aging concerns	0.003	
Physical health→Mental health→ATOA→Aging concerns	-0.011	*
Cognitive health→Mental health→Aging concerns	-0.019	**
Cognitive health→ATOA→Aging concerns	-0.009	*
Cognitive health→Mental health→ATOA→Aging concerns	-0.002	*
Mental health→ATOA→Aging concerns	-0.017	*
Total Effect		
Physical health→Aging concerns	-0.208	***
Cognitive health→Aging concerns	-0.21	***
Mental health→Aging concerns	-0.198	***

*p<0.05; **p<0.01; ***p<0.001.

In order to ascertain whether a path of the mediating effect is statistically significant, it is not enough to evaluate the significance of each direct effect in the path individually. Rather, the entire path must be subjected to a comprehensive test. The most commonly employed test in this regard is the Bootstrap test, which does not require complete reliance on the assumption of normality and demonstrates superior performance with small or medium-sized samples, making it an appropriate choice for this paper. Table 3 presents the results of the standardized results, with the mediating effect passed the bootstrap self-sampling test 5000 times at the 95% confidence intervals.

The results show that for the whole sample, the total effect of physical, cognitive and mental health on aging concerns was statistically significant. In the absence of a direct effect of physical health on aging concerns, it can be posited that physical health exerts further influence on aging concerns by influencing mental health. Similarly, cognitive health has both a direct effect on aging concerns and can indirectly affect aging concerns by influencing mental health. It can be concluded that mental health fully mediates the effect of physical health on aging concerns, while it partially mediates the effect of cognitive health on aging concerns.

Furthermore, as both cognitive and mental health have a direct effect on aging concerns, and attitudes towards older adults can also have a direct effect on aging concerns, attitudes towards older adults play a partial mediating role in the relationship between cognitive and mental health on aging concerns. However, the mediating effect as a proportion of the total effect is relatively low, suggesting that cognitive and mental health mainly affect individuals' aging concerns through the direct effect. In conclusion, Hypothesis C1 was supported, while hypothesis C2 was partially supported.

6. Conclusion

The aging concerns are mediated by multiple factors, with the mental health playing an important role in this process. Individuals' diminished physical and cognitive capabilities, coupled with more negative attitudes toward older adults, directly elevate aging concerns. Moreover, diminished cognitive capabilities also diminish individuals' mental health, and negative mental health further exacerbates individuals' negative attitudes toward older adults, thereby contributing to raise aging concerns. It is also noteworthy that a decline in physical health does not directly lead to an increase in aging concerns. Rather, it exacerbates aging concerns by reducing individuals' mental health. This indicates that a decline in physical ability is not the direct cause of concern, but may be the result of a disability that is not matched by social support or under discrimination. Consequently, it is of particular importance to build elderly-friendly communities, service systems, and socio-cultural environments in the context of an aging population in China.

The aging concerns reflects the existence of differences between the past, the present and the future. In the past life course, individuals internalize societal perceptions and opinions of older people, accepting the gender division of labor. As they grow older, the effects of attitudes towards older people emerge, and the gender division of labor continues to produce differences. In the present, physical and cognitive health serve as a foundation for individuals to anticipate their future circumstances. It is evident that good present health contributes to a reduction in concerns about the future. In the future dimension, aging concerns are essentially evaluations of an imagined self. It is clear that psychological states and personality traits play an important role in producing this imagery.[18,19] This paper represents a preliminary investigation into a topic that has been largely overlooked in Chinese research. It offers insights into the multifaceted nature of individual aging concerns, providing a foundation for further inquiry and the mitigation of individual and societal concerns in a range of ways.

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