

Attitudes Toward Combining Psychological, Mind-Body Therapies and Nutritional Approaches for the Enhancement of Mood

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ABSTRACT

Context • Interest has been rising in the use of complementary and alternative medicine (CAM) for the promotion of health and treatment of disease. To date, the majority of CAM research has focused on exploring the demographic characteristics, attitudes, and motivations of CAM users and on the efficacy of different therapies and products. Less is known with respect to the psychological characteristics of people who use CAM. Previous research has not investigated the usefulness of integrating mind-body therapies with natural products in a combined mood intervention.

Objective • The study intended to investigate attitudes toward a proposed new approach to the treatment of mood, one that integrates psychological mind-body therapies and natural nutritional products.

Design • Participants completed an online survey covering demographics, personality traits, locus of control, use of CAM, attitudes toward the proposed psychonutritional approach, and mood.

Setting • This study was conducted at the University of Adelaide School of Psychology (Adelaide, SA, Australia).

Participants • Participants were 333 members of the Australian general public, who were recruited online via the social-media platform Facebook. The majority were women (83.2%), aged between 18 and 81 y.

Outcome Measures • Measures included the Multidimensional Health Locus of Control Scale Form B, the Ten-Item Personality Inventory, and the Depression, Anxiety and Stress Scale.

Results • Participants were positive about the proposed approach and were likely to try it to enhance their moods. The likeliness of use of the combined approach was significantly higher in the female participants and was associated with higher levels of the personality trait openness and an internal health locus of control, after controlling for all other variables.

Conclusions • Interest exists for an intervention for mood that incorporates both psychological and nutritional approaches. Further research into the development of targeted treatment programs for mood is warranted. (*Adv Mind Body Med.* 2016;30(3):19-25.)

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Interest has been rising in the use of complementary and alternative medicine (CAM) for the promotion of health and treatment of disease.¹ Examples of CAM practices include mind-body therapies, such as meditation and yoga, and natural products, such as vitamin supplements and herbal medicine.² Estimates of the prevalence of CAM use in a

12-month period include 38.3% in the United States,^{3,4} 28.3% in the United Kingdom,⁵ and 52.2% to 68.9% in Australia.^{6,7}

Investigations into CAM use have shown that natural products, deep-breathing exercises, and meditation are the most commonly used therapies in the United States, with use of mind-body therapies on the rise,³ whereas in Australia, the use of vitamin and mineral supplements, massage, and meditation are the most popular.^{6,7} As support for the use of CAM grows, complementary practices are being increasingly incorporated into conventional systems of health care⁸ for the treatment of both physical symptoms and disease and psychological health issues.³

To date, the majority of CAM research has focused on exploring the demographic characteristics, attitudes, and motivations of CAM users and on the efficacy of different therapies and products. The typical demographic characteristics of CAM users are well established.^{2,3,9} In Australia, CAM users

tend to be women and young to middle aged (ie, between 25 and 44 y old), with higher levels of education.⁶ By comparison, US data indicate that CAM users tend to be 30 to 69 years old.³ CAM users are also more likely to be employed and to be covered by private health insurance.⁷ The evidence with respect to income is less clear, but several studies have suggested that CAM use is more common among people with a higher than average level of income.⁷

Less is known with respect to the psychological characteristics of people who use CAM. One study found that CAM use was positively correlated with internal locus of control,¹⁰ such that those with a greater sense of personal control over their health were more likely to use CAM practices. A positive association with the personality trait openness has also been found.¹¹ Nevertheless, minimal data exist on the psychological characteristics of CAM users, and further research is required.

A number of CAM studies have explored people's attitudes toward and reasons for using CAM.¹² A consistent finding has been that a belief in the value of holistic and integrated health care is common among CAM users.^{10,12} Beliefs regarding the strong connection between mind, body, and spirit and the importance of a holistic approach are associated with higher CAM use.^{10,13} Other key motivations held by people engaging in CAM services include confidence in the benefits of combining multiple therapies in a treatment approach,¹⁴ a belief in health practices being natural and drug free,² dissatisfaction with mainstream medicine,^{9,10} and the desire of the individual to play a more active role in his or her health care.¹²

Various CAM practices may be used to assist in the treatment of mood.¹⁵ Mind-body therapies are often engaged because they target the relationship between a person's psychological state and his or her physical body, the aim being to cultivate the ability of the mind to affect physical functioning and vice versa.¹⁶ Mind-body therapies can help to improve mood by fostering mental and physical relaxation and decreasing general distress.¹ Meditation is one of the more well-known mind-body therapies used in the treatment of mental health issues.¹

Research has also been promising with respect to the utility of other mind-body therapies as complementary interventions for the treatment of mood, in particular hypnosis^{17,18} and yoga.^{19,20} In addition, natural products such as herbal and vitamin supplements are commonly taken to enhance mental health and well-being.²¹ To date, considerable research has shown the importance of various macronutrients—fats, proteins, and carbohydrates—and micronutrients—vitamins and minerals—in promoting health as well as has examined their roles in determining both physical and psychological health, including in relation to the regulation of mood (eg, improving symptoms of anxiety, irritability, and depression).^{22,23}

Previous research has not investigated the usefulness of integrating mind-body therapies with natural products in a combined mood intervention. Past studies have explored the

utility of the practices as monotherapies (ie, when used alone) and as adjuncts to certain conventional approaches (eg, with pharmacology), but no previous research has considered combining the 2 types of complementary approaches for the purpose of enhancing mood.

Given the evidence that many people turn to CAM because of a strong belief in a holistic approach to health care, it stands to reason that combining the practices to treat mood from both a psychological and a nutritional angle could be useful. The present study has explored the attitudes toward a psychonutritional approach to the enhancement of mood and has examined the demographic and psychological characteristics associated with likely use.

METHODS

Participants

The target population was members of the Australian general public, aged 18 years and older, who were recruited online via the social media platform, Facebook (Menlo Park, CA, USA). There were no exclusion criteria except that participants had to be 18 years or older and living in Australia at the time of the completion of the survey. Participants were advised of the study's aims via an information page presented prior to commencement of the survey. Participants were advised that by completing the survey they were providing consent for the study. Data were collected between April 2014 and June 2014. Ethics approval for the study was obtained from the University of Adelaide Human Research Ethics Committee (Adelaide, SA, Australia). A total of 435 people responded to the online survey.

Procedures

A link to the online survey and a request for participants was placed on the first author's Facebook profile page and on the second author's professional practice Facebook page. Participants voluntarily shared the link on their own profile pages. Data were collected on SurveyMonkey (Palo Alto, CA, USA). Demographic information was collected regarding age, gender, education, relationship status, and income. Participants completed (1) a Likert scale regarding current levels of physical and mental health, (2) the Multidimensional Health Locus of Control (MHLC) Scale Form B,²⁴ (3) the Ten-Item Personality Inventory (TIPI),²⁵ and (4) the Depression, Anxiety, and Stress Scale (DASS-21).²⁶ Participants also (1) answered questions about their use of CAM, (2) completed a Likert scale on attitudes toward use of CAM to enhance mood, (3) completed a Likert scale on the likelihood of their use of the psychonutritional approach, and (4) completed a Likert scale on importance of various treatment characteristics.

Outcome Measures

Likert Scale on Physical and Mental Health. Participants rated their current levels of physical and mental health on a 5-point Likert scale, ranging from 1 (poor) to 5 (excellent).

MHLC Scale Form B.²⁴ The MHLC Scale Form B is an 18-item measure of health beliefs across 3 dimensions:

internality, powerful others externality, and chance externality. Each item comprises a statement about health outcomes rated on a 6-point Likert scale ranging from 1 (strongly disagree) to 6 (strongly agree). The internality subscale consists of 6 items. An example item is, "If I become sick, I have the power to make myself well again." Powerful others externality is made up of 6 items. An example is, "I can only maintain my health by consulting health professionals." Chance externality is composed of 6 items, such as, "When I stay healthy, I'm just plain lucky." Higher scores indicate a stronger locus of control in that domain. The MHLC has good construct and predictive validity and good internal consistency, with Cronbach α coefficients reported for the 3 subscales of 0.77 for internality, 0.67 for powerful others externality, and 0.75 for chance externality.²⁴ In the current study, the Cronbach α coefficients were 0.78 for internality, 0.77 for powerful others externality, and 0.67 for chance externality.

The TIPI²⁵ is a very brief measure of the "big-five" personality dimensions. The TIPI consists of 10 pairs of personality traits rated on a 7-point Likert scale, ranging from 1 (disagree strongly) to 7 (agree strongly). The 10 items make up 5 dimensions: extraversion, agreeableness, conscientiousness, emotional stability, and openness. An example pair of personality traits is "extraverted, enthusiastic." Participants were instructed to rate the extent to which the pair of traits applies to them, even if one of the characteristics applies more strongly than the other. One pair for each subscale is negatively worded and reverse scored. The measure is reported to have adequate levels of convergent validity, test-retest reliability, and patterns of external correlates. Although the TIPI is less reliable than longer personality measures such as the Big-Five Inventory, Gosling, Rentfrow, and Swann²⁵ reported that it is adequate as a brief measure.

Depression Anxiety and Stress Scale.²⁶ The DASS-21 is a measure of current psychological distress. The survey consists of 21 statements and 3 subscales: depression, anxiety, and stress. Participants rated the extent to which each statement applied to them during the past week, from 0 (never) to 3 (almost always). The depression subscale consists of 7 items. An example question is, "I couldn't seem to experience any positive feeling at all." The anxiety subscale consists of 7 items, such as, "I was worried about situations in which I might panic and make a fool of myself." The stress subscale consists of 7 items. An example question is, "I found it hard to wind down." According to Lovibond and Lovibond,²⁶ the DASS-21 has good internal consistency, with Cronbach α coefficients reported for the 3 subscales of 0.88 for depression, 0.82 for anxiety, and 0.90 for stress. In the current study, the Cronbach α coefficients were 0.90 for depression, 0.80 for anxiety, and 0.86 for stress.

Assessment of Use of and Attitudes Toward CAM. The research team developed questions for the assessment. A brief explanation of CAM was provided, followed by 6 questions that covered participants' past, current, and future use of CAM, their most used type of CAM, and the main reason for their use.

Likert Scale on Attitudes Toward Use of CAM to Enhance Mood. Participants were asked to rate their attitudes toward such use on a 5-point Likert scale, ranging from 1 (very negative) to 5 (very positive).

Likert Scale on Likelihood of Use of the Psychonutritional Approach. After the prior questionnaire, a brief explanation of the proposed combined approach was provided, followed by 4 questions to assess participants' attitudes toward and likely use of the approach. The questions were rated on a 5-point Likert scale, ranging from 1 (not at all) to 5 (very likely). For example, one item asked, "Would you be likely to use this type of combined approach to enhance your mood?"

Likert Scale on Importance of Treatment Characteristics. In addition, 8 items measured the extent to which certain treatment characteristics were important to participants. The statements were rated on a 5-point Likert scale, ranging from 1 (not at all) to 5 (extremely). For example, one item stated that an important characteristic would be that the treatments were "holistic in their approach."

Statistical Analysis

Data were analyzed using statistical package SPSS, version 20 (IBM, Armonk, NY, USA).

RESULTS

Of the 435 people who responded to the online survey, 102 did not complete a minimum requirement of at least 90% of the question items or did not satisfy inclusion criteria (younger than 18 y or not living in Australia). Their information was excluded from the analysis.

The final sample was composed of a total of 333 participants responding from Australia; 269 (82.3%) were female; 58 (17.7%) were male; and 6 did not indicate their genders. Participants were aged between 18 and 81 years, with a mean age of 37.09 ± 12.61 years. Relationship status, level of education, and income varied, although most participants reported being in a relationship, having a postsecondary school education, and earning an annual income of AU\$52 000 or more.

Outcome Measures

Likert Scale on Physical and Mental Health. Participants reported good current levels of both physical health, with a mean of 2.3 ± 0.95 , and mental health, with a mean of 2.37 ± 1.01 .

MHLC Scale Form B. On a possible range from 6 to 36, participants reported moderate levels of internal locus of control (mean, 26.50; SD, 4.62), lower levels of chance externality locus of control (mean, 16.90; SD, 4.28), and powerful others externality locus of control (mean, 16.5; SD, 4.79; range, 6–36).

Ten-Item Personality Inventory. On a possible range from 1 to 7, participants reported moderate levels of extraversion (mean, 4.39; SD 1.48) and emotional stability (mean, 4.61; SD 1.48), and higher levels of agreeableness

(mean, 5.27; SD 1.10), conscientiousness (mean 5.30; SD 1.23), and openness (mean, 5.30, SD 1.09).

Depression, Anxiety, and Stress Scale. On a possible range from 0 to 21, participants reported mild levels of depression (mean, 5.84; SD, 3.90), normal levels of anxiety (mean, 2.97; SD, 3.20), and normal levels of stress (mean, 3.78; SD, 3.99).

Assessment of Use of and Attitudes Toward CAM. The majority (283) of participants (85.5%) reported having used some form of CAM in the past; 201 (61.3%) used some form of CAM currently; and 284 (85.8%) were likely to use some form of CAM in the future. The CAM category most likely to be used was mind-body therapies: 170 participants (53.5%).

The main reasons CAM services were engaged were (1) their holistic nature: 94 participants (28.7%); (2) their provision of the opportunity to be more active in one's own health care: 87 participants (26.6%); and (3) their ability to complement treatment received from conventional health care: 73 participants (22.3%).

The majority of participants rated their overall attitudes toward CAM as positive, with a mean of 4.00 ± 0.96 . More specifically, 133 participants (40.4%) rated their attitudes as positive and 113 (34.4%) rated them as very positive.

Likert Scale on Importance of Treatment Characteristics. Participants believed certain characteristics of treatments, in general, to be moderately important to "quite a bit" important. These included that they should (1) be drug-free, with a mean of 3.01 ± 1.37 ; (2) be natural, with a mean of 3.43 ± 1.37 ; (3) be holistic, with a mean of 3.48 ± 1.36 ; (4) target both mind and body, with a mean of 3.57 ± 1.27 ; (5) be effective in clinical trials, with a mean of 3.90 ± 1.09 ; (6) provide immediate relief, with a mean of 3.40 ± 0.98 ; and (7) be geared toward self-care, with a mean of 3.94 ± 1.12 . In addition, participants reported that it was "quite a bit" to extremely important that treatments provide relief in the long term, with a mean of 4.32 ± 0.77 .

Likert Scale on Attitudes Toward Use of CAM to Enhance Mood. Participants' overall attitudes toward the proposed psychonutritional approach for the enhancement of mood were positive, with a mean of 4.04 ± 0.94 . More specifically, 138 participants (41.7%) rated their attitudes as positive, and 117 (35.3%) rated their attitudes as very positive.

Likert Scale on Likelihood of Use of the Psychonutritional Approach. In terms of their likelihood of using the approach to enhance mood, 74 participants (22.4%) responded that they were maybe likely, 103 (31.2%) were likely, and 108 (32.7%) were very likely, with a mean of 2.78 ± 1.14 . The relationship between age and likely use of the combined approach was nonsignificant, with $H = 3.19$, $df = 3$, and $P = .36$. Women, with a mean rank of 168.92 ($n = 268$), were significantly more likely to use the combined approach than men, with a mean rank = 131.79 ($n = 56$), $U = 5784.5$, $z = -2.81$, and $P = .005$ (2-tailed).

Further analyses were conducted to explore possible trends in attitude by gender and age. Table 1 shows participants' attitudes toward the combined treatment by gender. Women

were significantly more likely to hold a positive attitude toward CAM in general and toward the combined approach and to value the importance of treatments being drug free, natural, and holistic; targeting the mind and body; and providing immediate and long-term relief. Further analysis of attitudes by age group did not reveal any significant trends.

Associations Between Variables

No statistically significant associations were found between the likely use of the combined approach and education ($H = 8.85$; $df = 5$; $P = .16$) or relationship status ($H = 5.48$; $df = 4$; $P = .24$). A significant association did exist between level of income and likely use of the combined approach ($H = 11.57$; $df = 5$; $P = .04$). Participants whose incomes were within the AU\$31 200–\$51 999 bracket, with a mean rank = 57.36 ($n = 58$), were significantly more likely to use the combined approach than those whose incomes were very low (ie, <AU\$15 600), with a mean rank = 43.77 ($n = 44$), $U = 936.0$, $z = 2.42$, $P = .02$ (2-tailed)—or were high (ie, AU\$104 000+), with a mean rank = 38.65 ($n = 38$), $U = 727.5$, $z = -3.11$, $P = .002$ (2-tailed).

To investigate the predictors for likely use of the combined approach further, univariate, ordinal, logistic regression models were carried out. The only demographic variable to remain a significant predictor of likely use of the combined approach after controlling for other confounding variables was gender. Specifically, women were about twice as likely as men to be quite or very likely to use the combined approach, after controlling for 11 confounders (OR = 2.15; 95% CI, 1.22 to 3.78; $P = .008$).

A weak, significant, positive correlation existed between likely use of the combined approach and openness ($r_s = 0.24$; $n = 330$; $P < .001$), with high levels of openness associated with higher levels of likely use. A weak, significant, positive correlation also was found between likely use of the combined approach and extraversion ($r_s = 0.12$; $n = 330$; $P = .03$), with high levels of extraversion associated with higher levels of likely use. A weak, significant, negative correlation existed between likely use of the combined approach and emotional stability ($r_s = -0.13$; $n = 330$; $P = .015$) with high levels of emotional stability associated with lower levels of likely use.

Openness remained a statistically significant predictor of likely use of the combined approach after controlling for other variables. For every unit increase in openness, a 13% increase occurred in being quite or very likely to use the combined approach, after controlling for 11 confounders (OR = 1.35; 95% CI: 2.00 to 1.67; $P = .005$).

A weak, significant, positive correlation was found between likely use of the combined approach and internal health locus of control ($r_s = 0.30$; $n = 330$; $P < .001$), with high levels of internal locus of control associated with higher levels of likely use. A weak, significant, negative correlation occurred between likely use of the combined approach and external (powerful others) locus of control ($r_s = -0.15$; $n = 330$; $P = .007$), with high levels of external locus of control associated with lower levels of likely use. Furthermore, a weak, significant,

Table 1. Attitudes Toward Treatment by Gender

	Men n = 58 Mean (SD)	Women n = 269 Mean (SD)	P Value
Attitude toward CAM ^a	3.69 (1.11)	4.07 (.91)	.0061 ^d
Attitude toward combined approach ^a	3.63 (1.16)	4.12 (.81)	.0002 ^e
Likely use of combined approach ^b	2.34 (1.28)	2.86 (1.10)	.0019 ^d
Importance of treatments being . . .			
Drug free ^c	2.64 (1.32)	3.08 (1.37)	.0263 ^f
Natural ^c	2.95 (1.44)	3.53 (1.34)	.0034 ^d
Holistic ^c	3.05 (1.42)	3.55 (1.33)	.0108 ^f
Mind-body ^c	3.24 (1.30)	3.62 (1.26)	.0393 ^f
Effective ^c	4.03 (1.09)	3.87 (1.09)	.3117
Immediate relief ^c	3.14 (.99)	3.46 (.96)	.0227 ^f
Long-term relief ^c	4.12 (.90)	4.36 (.74)	.0324 ^f
Self-care ^c	3.69 (1.30)	3.99 (1.07)	.0640

^aResponses ranging from 1 (very negative) to 5 (very positive).

^bResponses ranging from 0 (not at all) to 4 (very likely).

^cResponses ranging from 1 (not at all) to 5 (extremely).

^d $P < .01$.

^e $P < .001$.

^f $P < .05$.

Abbreviations: SD, standard deviation; CAM, complementary and alternative medicine.

negative correlation existed between likely use of the combined approach and a chance external locus of control ($r_s = -0.15$; $n = 330$; $P = .008$), with high levels of chance external locus of control associated with lower levels of likely use.

Internal health locus of control remained a statistically significant predictor of likely use of the combined approach after controlling for other confounders. For every unit increase in the internal locus of control score, an 11% increase occurred in being quite or very likely to use the combined approach, after controlling for other variables in the model (OR = 1.11; 95% CI: 1.06 to 1.17; $P < .001$).

A weak, significant positive correlation existed between depression and likely use of the combined approach ($r_s = 0.18$; $n = 330$; $P = .001$), with high levels of depression associated with higher likely use. In addition, a weak, significant, positive correlation was found between anxiety and likely use of the combined approach ($r_s = 0.16$; $n = 330$; $P = .004$), with higher levels of anxiety associated with a higher likelihood of use. A weak, significant positive correlation was found between stress and likely use of the combined approach ($r_s = 0.13$; $n = 330$; $P = .02$), with higher levels of stress associated with higher likely use. However, results of a multivariate, ordinal, logistic regression model indicated that depression, anxiety, and stress no longer remained significant predictors of likely use of the combined approach after control for other confounding variables.

DISCUSSION

The findings of the present study suggest that people are open to and interested in using an intervention for mood that combines psychological and nutritional therapies (ie, a combined psychonutritional approach). The rate of CAM usage found in the current study was similar to that reported in previous Australian investigations,^{6,7} albeit higher than US figures, and the reasons for use were also consistent with previous research.¹⁰ The majority of participants held positive attitudes toward CAM, including the proposed psychonutritional approach for the enhancement of mood, and indicated that they were either likely or very likely to try the approach. Women were especially likely to use the proposed combined approach.

No significant associations were found between age, relationship status, or level of education and likely use of the combined approach in the current study, suggesting that the combined approach may be broadly appealing across those demographics. That finding differs from the results of previous investigations into general CAM use, such as in the United States, where higher rates of use have been found for certain demographic profiles (eg, older adults and those with a higher level of education).^{3,10} A weak but significant association was found between income and likely use of the combined approach, with earners with low-middle incomes being more likely to use the approach than earners with very

low or high incomes, although the associations did not remain significant after controlling for other predictors.

In terms of personality traits, participants in the current study whose personalities were characterized by curiosity and interest in new ideas (openness) and/or energy, enthusiasm, and activity (extraversion) were more likely to try the combined psychonutritional approach. Openness remained a significant predictor of likely use even after controlling for other variables (ie, demographic variables, other personality traits, locus of control, and mood). People with a high level of openness have been found to be likely to be more curious, creative, flexible, interested in exploring ideas, and willing to try new experiences.²⁷ The combined therapy constitutes a novel approach that may have piqued their interest. The association with openness is consistent with the results of a previous investigation.¹¹

In the current study, emotional stability and likely use of the combined approach were negatively correlated (ie, people who reported being more emotionally stable were less likely to try the approach). Those people possibly had experienced fewer problems with their moods and, therefore, had fewer needs for an intervention, conventional or otherwise. In contrast, people who were less emotionally stable were more likely to try the approach; those people may have been more emotionally reactive and susceptible to mood swings, with potential implications for their functioning and, therefore, have had a greater need for an intervention to provide some relief. Nevertheless, emotional stability was not a significant predictor above and beyond other potentially confounding variables. Openness was the strongest personality factor to predict likely use.

Participants with higher levels of internal health locus of control were more likely to use the combined approach, which is consistent with the results of previous research.¹⁰ The stronger a person's belief in personal responsibility for health, the more likely they are to be interested and action oriented in relation to making changes and seeking opportunities to enhance their moods, if needed. Conversely, people who believe that their health is influenced more by external factors, such as the actions or advice of medical professionals or even by chance events, are perhaps less likely to be so proactive or involved in self-management of their health. Those characterizations are consistent with the findings of the current study; people with a higher external locus of control were less interested in trying the proposed approach.

In the current study, participants experiencing higher levels of depression, anxiety, and/or stress were more likely to use the combined approach. Logically, an intervention for mood is likely to be more appealing to people who are experiencing current psychological distress than to those who are not. Whether or not interest in the approach would lead to follow-through and completion of such an intervention is another issue. Research indicates that as depression severity increases, adherence to treatment decreases.²⁸ Furthermore, severe depression can be quite difficult to treat (eg, due to high

levels of hopelessness).²⁹ Thus, even if people are interested in trying a new approach to improve their moods, that fact does not necessarily equate to successful adherence. Although the results have suggested that interest in the proposed combined approach is higher in people with current psychological distress, it should be noted that depression, anxiety, and stress did not remain significant predictors of likely use after other variables were taken into account.

With respect to limitations in the current study, women were overrepresented (82.3%). The current research team did not explore the influence of culture or subculture on attitudes, both of which have been investigated in US research.³ Future research might address that limitation and consider comparison with the indigenous population's CAM use in Australia, for example.

Acknowledging the limitations of a cross-sectional online survey, the current study indicated that the further exploration of approaches that combine psychological mind-body therapies and natural and nutritional products to enhance mood is warranted.

CONCLUSIONS

Interest exists for an intervention for mood that incorporates both psychological and nutritional approaches. Further research into the development of targeted treatment programs for mood is warranted.

AUTHOR DISCLOSURE STATEMENT

Taryn Lores and Anna Chur-Hansen declare no conflicts of interest. Miriam Henke had no competing financial interests at the time of the research. However, she may, in the future, develop psychonutritional products for the market.

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