

■ CONTENTS

1
Intuitive Eating: Research Update

3
From the Editor

6
CPE article:
The Significance of Essential Amino
Acid Density to Protein Quality: Con-
siderations for Building Healthy Eat-
ing Patterns

9
Can Dairy Products Play a Role in
Cardiometabolic Health?

13
From the Chair

14
Conference Highlights

18
Reviews

18
Research Digest

20
SCAN Notables

22
Of Further Interest

24
Upcoming Events

Intuitive Eating: Research Update

by Evelyn Tribole, MS, RDN

In 1995, Elyse Resch and I developed the Intuitive Eating (IE) model to help move consumers away from the hazards of dieting.¹ Our model was informed by both evidence-based studies and our clinical experience working with patients. While the hazards of dieting had been well-documented at that time, a body of research continues to show the profundity of harm associated with dieting, including increased risk of eating disorders (EDs), binge eating, weight gain, food preoccupation, body dissatisfaction, and weight stigma, as well as poor psychological health, such as depression and anxiety.² Today there is robust research on IE, with more than 70 published studies showing benefits and providing growing recognition that IE is a healthy adaptive eating style that may aid in positive psychological and physical well-being.³ This article presents a brief summary of the research and implications.

What Is Intuitive Eating?

Intuitive Eating, an evidence-based model, is a dynamic integration between mind and body via 10 principles (Table 1, page 4) that work by either cultivating or removing obstacles to body awareness, known as interoceptive awareness.

Interoceptive awareness is the ability to perceive physical sensations that arise from within the body; this awareness is a direct experience mediated by the right brain.⁴ Indeed, several studies show that Intuitive Eaters have higher interoceptive awareness.⁵ However, body awareness itself is only one part of the process. The way in which an individual values and responds to these body sensations is known as interoceptive responsiveness.⁶ This responsiveness, or attunement, to physical body sensations provides a person with a powerful portal to tap into for identifying his or her needs, including:

- *Emotional feelings.* Every emotion has a physical sensation.
- *States.* States such as sleepiness or having a full bladder have a physical sensation.
- *Biological eating cues.* Cues such as hunger and fullness have unique physical sensations.

Ultimately, IE is a personal process of honoring health by listening and responding to the direct messages of the body in order to meet physical and psychological needs. The challenge in today's dieting, clean eating, culture is that many people do not value, let alone trust, their body's sensations. Instead, they eat based on

Academy of Nutrition and Dietetics
Dietetic Practice Group of Sports,
Cardiovascular, and Wellness Nutrition (SCAN)
SCAN Website: www.scandpg.org

SCAN Office

230 Washington Ave. Ext., Suite 101
Albany, NY 12203
Phone: 518/254-6730; 800/249-2875
info@scandpg.org
Executive Director: Thomas J. Coté, MBA, CAE

SCAN Executive Committee

Chair

Cheryl Toner, MS, RDN

Chair-Elect

Lindzi Sara Howder, MPH, MS, RDN, CSSD

Past Chair

Karen Collins, MS, RDN, CDN, FAND

Treasurer

Jon Vredenburg, RDN, CSSD, CDE

Secretary

Sherri Stastny, PhD, RD, CSSD

Director, Sports Dietetics—USA Subunit

Elizabeth Abbey, PhD, RDN, CDN

Co-Directors, Wellness/Cardiovascular RDs Subunit

Amanda Clark, MA, RD, CHES
Judith Hinderliter, MPH, RD, CPT

Director, Disordered Eating & Eating Disorders Subunit

Sarah Gleason, RD, CEDRD

Director of Events

Enette Larson-Meyer, PhD, RD, CSSD, FACSM

Director of Communications

Heather Mangieri, MS, RD, CSSD

Director of Member Services

Karen Reznik Dolins, EdD, RD, CSSD, CDN

Director of Volunteer Coordination

Noaa Bujanover, MS, RD, CSSD

SCAN Delegate to House of Delegates

Jean Storlie, MS, RD

Editor-in-Chief, SCAN'S PULSE

Mark Kern, PhD, RD, CSSD

DPG Relations Manager

Mya Wilson, MPH, MBA

To contact an individual listed above, go to
www.scandpg.org/executive-committee/

externality—i.e., eating according to rules and diet plans, which ultimately create confusion between mind and body.

Key Characteristics of Intuitive Eaters

In 2006, Tylka published a four-part seminal study on IE that evaluated health benefits in 1,260 female college students, and created and validated the Intuitive Eating Scale (IES).⁷ IES scores were negatively related to ED symptoms, body dissatisfaction, poor interoceptive awareness, pressure for thinness, and internalization of the thin ideal. High IES scores were associated with several indexes of well-being, including proactive coping, higher body satisfaction, and general life satisfaction. This scale was updated in 2013 and validated to include both men and women (2,600 college students); it has also been validated in other countries and in adolescents.⁷⁻¹¹ The most current IES is composed of four subscales. It is based on the 10 principles of Intuitive Eating, and ultimately reflects four key characteristics of Intuitive Eaters.⁸

1. Eating for physical rather than emotional reasons. Eating is based on satisfying hunger, rather than undertaken to escape emotions or self-soothe.

2. Presence of unconditional permission to eat. This reflects the ability to eat foods desired when hungry, as well as refusal to label foods as forbidden or bad. (Note that attunement is a vital aspect, as sometimes people mistakenly perceive this as an authorization to overeat.)

3. Reliance on hunger and satiety cues. Eating is based on internal hunger and satiety cues, and these cues are trusted to guide eating behavior.

4. Body-food choice congruence. This reflects the extent to which a person matches his or her food choices with the needs of the body.

Benefits of Intuitive Eating

A recent meta-analysis review of 24 studies published between 2006 and 2015 found that IE was associated with the following benefits:¹²

- Greater body appreciation and satisfaction
- Positive emotional functioning
- Greater life satisfaction
- Unconditional self-regard and optimism
- Psychological hardiness
- Greater motivation to exercise when focus is on enjoyment rather than guilt or appearance

Furthermore, IE was inversely related to disordered eating, dieting, poor interoceptive awareness, and internalization of thin ideal. Most of the research to date has been cross-sectional in nature and mostly limited to college-aged women. Prospective intervention studies are needed to verify the beneficial associations.

Another scholarly review evaluated the relationship between IE and health indicators, and found that IE was associated with improved blood pressure, blood lipids, and dietary intake.¹³ It is noteworthy that one of the earliest studies evaluated the health-related properties of Intuitive Eaters' food choices.¹⁴ People scoring high on Hawk's Intuitive Eating scale ate a more varied diet. It is important to note that Hawk's scale is different from the Tylka scale. Hawk's scale has four components: intrinsic eating (reflects eating based on inner body cues), extrinsic eating (reflects external triggers for eating such as mood and food availability), anti-dieting, and self-care (reflects taking care of the body).

Intuitive Eating and Recent Research

Eating Disorders

A recent study from Germany looked specifically at the relationship between IE and individuals who had a range of EDs.⁹ The results provided the first evidence of reduced IE

From The Editor

The Spice of Life

by Mark Kern, PhD, RD, Editor-in-Chief

From the title, you probably think the theme of this article is about zesty flavor, but actually it's about the variety of topics we've provided for you to read. I'm not sure why I'm always surprised when an issue covers such an assortment of subjects, but I am. It goes to show just how diverse and interdisciplinary SCAN and the fields of nutrition and dietetics are.

On the cover you'll find an excellent article by Evelyn Tribole, MS, RD that describes the current state of research on Intuitive Eating, which she helped to pioneer. Our free CPE article, written by Nancy Rodriguez, PhD, RD, CSSD, FACSM, discusses the importance of protein quality within dietary patterns of athletes. Later in these pages you will find a review from Sara Llamas-Moya, M.Sc., PhD on the roles of dairy products in affecting risk factors for cardiometabolic diseases. Finally, we have included extensive coverage of the recent Annual SCAN Symposium in "Conference Highlights," thanks to the hard work of our exceptional Highlights editor Nancy Clark, MS, RD and an assist from our very own Karen Wetherall, RD.

The array of information doesn't stop there, though. We also have a wide range of information in our "SCAN Notables," "Research Digest," "Reviews," and "Of Further Interest" sections. And since variety is considered the spice of life, I'm sure you'll feel like a seasoned professional after you've read this issue cover to cover.

scores in individuals with EDs and suggest that the IES could be a useful tool in monitoring recovery progress.

This is consistent with other studies, which indicate promise for using IE in the prevention and treatment of EDs.^{7,8,15-18} Similarly, a new study on retired athletes indicates that IE may help reduce disordered eating and help athletes to relearn how to trust their bodies' signals about hunger and satiety once they leave their sport.¹⁹

Diabetes

Emerging research suggests that IE programs could be a valuable tool to improve glycemic control.^{20,21} In children and adolescents with type 1 diabetes mellitus, there was an inverse relationship between hemoglobin A1c and IE scores.²⁰ Intuitive Eating may have even more saliency for people with diabetes. This is because people with diabetes are at higher risk of developing EDs, and IE is associated with decreased risk of problematic eating.

Intervention Studies

There are limited intervention studies, but the results are promising. A

recent short-term study used a combination of IE with Acceptance and Commitment Therapy (ACT).²² ACT is a validated counseling process that cultivates psychological flexibility via mindfulness, based on a person's value system. Women who completed the 3-month intervention improved in the areas of binge eating, general mental health, psychological flexibility, and IE.

A 10-week worksite wellness intervention program combined IE and mindfulness to address problematic eating behaviors, which is an unin-

"Rather than focus on weight, the focus of IE is on cultivating healthy behaviors, period. Body weight is not a behavior."

tended consequence of many traditional worksite wellness programs.²³ The intervention group had improvements in body appreciation, IE, and problematic eating behaviors compared with the control group. Notably, weight and body mass index (BMI) were not used as indicators of success, because focus on these may trigger problematic eating.

Body Mass Index

The body mass index is fraught with problems because it does not accurately reflect health status.²⁴⁻²⁶ However, it is noteworthy that the majority of studies that have evaluated the relationship between BMI and IE have found a negative association.^{3,27-31} This is relevant for health practitioners who are concerned that letting people eat whatever food they desire (unconditional permission to eat) would lead to weight gain. It is important to remember that attunement is a vital part of this principle.

For some people, there may be a side effect of weight loss as a consequence of implementing the IE principles. However, given that IE is an internal-based process, the promo-

Table 1. Intuitive Eating Principles and Interoceptive Awareness

Improves Interoceptive Awareness

- *Honor your hunger.* Eat when you are biologically hungry.
- *Respect your fullness.* Stop eating when comfortably full—not too little and not too much.
- *Discover the satisfaction factor.* Aim for satisfaction when eating meals and snacks.
- *Exercise—feel the difference.* Discover enjoyable ways to move the body.

Removes Obstacles to Interoceptive Awareness

- *Reject the diet mentality.* Stop all forms of dieting, behaviorally and mentally.
- *Make peace with food.* No food is forbidden. Eat the foods you desire, based on attunement to hunger and fullness cues.
- *Challenge the food police.* Challenge the food rules, the root of which may originate from personal, family, and cultural mores and beliefs.
- *Honor your feelings without using food.* Cope with your emotions without using food.
- *Respect your body.* Your body deserves to be treated with dignity and respect, regardless of shape or size.
- *Honor your health with gentle nutrition.* Select foods that taste good, while making you feel well.

Evelyn Tribole, MS, RDN divides her professional time between a private counseling practice in Newport Beach, CA and training/certifying health professionals in the Intuitive Eating process via teleseminars and workshops. Her newest book (co-author), *The Intuitive Eating Workbook*, was recently released. For more resources, visit www.IntuitiveEating.org.

References

1. Tribole E, Resch E. *Intuitive Eating*, 3rd ed. New York, NY: St. Martin's Press; 2012.
2. Bacon L, Aphramor L. Weight science: evaluating the evidence for a paradigm shift. *Nutr J*. 2011;10:9.
3. Tribole E, Resch E. *The Intuitive Eating Workbook: Ten Principles for Nourishing a Healthy Relationship with Food*. Oakland, CA: New Harbinger Publications; 2017.
4. Mehling W, Price C, Daubenmier J, et al. The multidimensional assessment of interoceptive awareness. *PLOS One*. 2012;7: e48230. Available at <http://dx.doi.org/10.1371/journal.pone.0048230>. Accessed December 7, 2016.
5. Herbert B, Blechert J, Hautzinger M, et al. Intuitive eating is associated with interoceptive sensitivity. Effects on body mass index. *Appetite*. 2013;70:22-30.
6. Oswald A, Chapman J, Wilson, C. Do interoceptive awareness and interoceptive responsiveness mediate the relationship between body appreciation and intuitive eating in young women? *Appetite*. 2017;109:66-72.
7. Tylka T. Development and psychometric evaluation of a measure of intuitive eating. *J Counsel Psych*. 2006;53:226-240.
8. Tylka T, Kroon Van Diest A. The Intuitive Eating Scale–2: item refinement and psychometric evaluation with college women and men. *J Counsel Psych*. 2013;60:137-153.

tion of IE for weight loss may undermine and interfere with the process, because weight loss is external-based. A recent 3-year prospective study illustrates this problem. Women who were trying to lose weight had a reduction in their IES score at year 3 compared with baseline scores.³¹ Furthermore, these women had increased episodes of binge eating, which is consistent with a body of research linking dieting to binge eating behaviors.^{23,28}

Health at Every Size (HAES)

A plethora of research shows that focusing on body weight and weight loss is linked to diminished physical and psychological health.²⁶ Particularly problematic is weight cycling, a byproduct of repetitive dieting, where weight is lost and regained—and is associated with increased mortality and morbidity, some forms of cancer, loss of muscle tissue, chronic inflammation, hypertension, and osteoporotic fractures.²⁶ With the push for “healthy weights” in public health

policy, there has been an unintentional consequence of weight stigma, which in and of itself is a risk factor for diminished health.^{2,17,26} For these reasons, a growing number of scientists and health professionals are calling for a weight inclusive or HAES approach, which advocates for IE.^{2,26,28,32} Rather than focus on weight, the focus of IE is on cultivating healthy behaviors, period. Body weight is not a behavior.

Conclusion

A body of research indicates that IE is a promising and comprehensive approach to healthy eating with physical and psychological health benefits. For the health practitioner, it is a gratifying way to collaborate with patients to achieve sustainable healthy behaviors, while helping them become the expert of their own bodies. However, there are gaps in the research. In particular, there is a need for intervention studies in a variety of age groups and across socio-economic backgrounds and gender.

9. Van Dyck A, Herbert B, Happ C, et al. German version of the Intuitive Eating Scale: psychometric evaluation and application to an eating disordered population. *Appetite*. 2016; 105:798-807.
10. Carbonneau E, Carbonneau N, Lamarche B, et al. Validation of a French-Canadian adaptation of the Intuitive Eating Scale-2 for the adult population. *Appetite*. 2016;105:37-45.
11. Dockendorff S, Petrie T, Greenleaf C, et al. Intuitive Eating Scale: an examination among early adolescents. *J Counsel Psych*. 2012;59:604-611.
12. Bruce L, Ricciardelli L. A systematic review of the psychosocial correlates of intuitive eating among adult women. *Appetite*. 2016;96:454-472.
13. Van Dyke N, Drinkwater E. Relationships between intuitive eating and health indicators: literature review. *Publ Health Nutr*. 2014;17:1757-1766.
14. Smith T, Hawks S. Intuitive eating, diet composition, and the meaning of food in healthy weight promotion. *Am J Health Educ*. 2006;(May/June): 130-134.
15. Anderson L, Reilly E, Schaumberg K, et al. Contributions of mindful eating, intuitive eating, and restraint to BMI, disordered eating, and meal consumption in college students. *Eating Weight Dis*. 2016;21:83-90.
16. Tylka T, Wilcox J. Are Intuitive Eating and eating disorder symptomatology opposite poles of the same construct? *J Counsel Psych*. 2006;53: 474-485.
17. Webb J, Hardin A. An integrative affect regulation process model of internalized weight bias and Intuitive Eating in college women. *Appetite*. 2016;102:60-69.
18. Spoor K, Madanat H. Relationship between body image discrepancy and Intuitive Eating. *Intern Quart Comm Health Educ*. 2016;36:189-197.
19. Plateau CR, Petrie TA, Papathomas A. Learning to eat again: Intuitive Eating practices among retired female collegiate athletes. *Eating Disorders*. 2016;Aug 12:1-7.
20. Wheeler B, Lawrence J, Chae M, et al. Intuitive Eating is associated with glycaemic control in adolescents with type I diabetes mellitus. *Appetite*. 2016;96:160-165.
21. Willig AL, Richardson BS, Agne A, et al. Intuitive Eating practices among African-American women living with type 2 diabetes: a qualitative study. *J Acad Nutr Diet*. 2014;114:889-896.
22. Boucher S, Edwards O, Gray A, et al. Teaching Intuitive Eating and Acceptance and Commitment Therapy skills via a web-based intervention: a pilot single-arm intervention study. *JMIR Res Protoc*. 2016;5:e180.
23. Bush H, Rossy L, Mintz L, et al. Eat for Life: a work site feasibility study of a novel mindfulness-based Intuitive Eating intervention. *Am J Health Prom*. 2014;28:380-388.
24. Tomiyama A, Hunger J, Nguyen-Cuu J, et al. Misclassification of cardiometabolic health when using body mass index categories in NHANES 2005-2012. *Inter J Obes*. 2016;40:883-886.
25. Bacon L, Aphramor L. Weight science: evaluating the evidence for a paradigm shift. *Nutr J*. 2011;10:9.
26. Tylka T, Annunziato R, Burgard D, et al. The weight-inclusive versus weight-normative approach to health: evaluating the evidence for prioritizing well-being over weight loss. *J Obes*. 2014;2014:983495.
27. Camilleri G, Méjea C, Bellisle F, et al. Intuitive eating is inversely associated with body weight status in the general population-based NutriNet-Santé study. *Obesity*. 2016;24:1154-1161.
28. Denny K, Loth K, Eisenberg M, et al. Intuitive Eating in young adults. Who is doing it, and how is it related to disordered eating behaviors? *Appetite*. 2013;60:13-19.
29. Cole R, Clark H, Heileson J, et al. Normal weight status in military service members was associated with Intuitive Eating characteristic. *Military Med*. 2016;181:589-595.
30. Madden C, Leong S, Gray A, et al. Eating in response to hunger and satiety signals is related to BMI in a nationwide sample of 1601 mid-age New Zealand women. *Pub Health Nutr*. 2012; Mar:1-8.
31. Leong S, Gray A, Haszard J, et al. Weight-control methods, 3-year weight change, and eating behaviors: a prospective nationwide study of middle-aged New Zealand women. *J Acad Nutr Diet*. 2016;116:1276-1284.
32. Cook-Cottone C, Tribole E, Tylka T. Healthy eating in schools: evidence-based interventions to help kids thrive. Washington, DC: American Psychological Association; 2013.

“With the push for ‘healthy weights’ in public health policy, there has been an unintentional consequence of weight stigma, which in and of itself is a risk factor for diminished health.”^{2,17,26}

Thrift-Remsen Printers
3918 South Central Ave.
Rockford, IL 6102-4290

PRESORT STANDARD
U.S. POSTAGE
PAID
ROCKFORD, IL
PERMIT NO. 2495

Upcoming Events

August 4-7, 2017

American Association of Diabetes Educators Annual Meeting, Indianapolis, IN. For information: AADE, www.diabeteseducator.org

October 7-10, 2017

AACVPR Annual Meeting, Charleston, SC. For information: American Association of Cardiovascular and Pulmonary Rehabilitation, www.aacvpr.org

October 21-24, 2017

2017 Food & Nutrition Conference & Expo™ (FNCE®)—Centennial Anniversary, Chicago, IL. For information: eatrightfnce.org. SCAN events at FNCE are detailed on page 23 of this issue of *PULSE*. For updates: www.scandpg.org/fnce-2017/

October 30-November 2, 2017

Obesity Week, Washington, DC. For information: American Society for Metabolic & Bariatric Surgery and The Obesity Society, www.obesity.org/meetings/obesity-week

November 10-12, 2017

Annual Renfrew Center Foundation Conference, Philadelphia, PA. For information: www.renfrew.org

May 4-6, 2018

Mark your calendar for the 34th Annual SCAN Symposium, *No Limits Nutrition: Extreme & Unique Practices*, Keystone, CO. More information to come.

SCAN'S PULSE

Publication of the Sports, Cardiovascular, and Wellness Nutrition (SCAN) dietetic practice group of the Academy of Nutrition and Dietetics. ISSN: 1528-5707.

Editor-in-Chief

Mark Kern, PhD, RD, CSSD
Exercise and Nutrition Sciences
San Diego State University
5500 Campanile Dr.
San Diego, CA 92182-7251
619/594-1834
619/594-6553 - fax
kern@mail.sdsu.edu

Sports Editors

Kristine Spence, MS, RD, CSSD
Michelle Barrack, PhD, RDN, CSSD

Cardiovascular Editor

Satya Jonnalagadda, MBA, PhD, RD

Wellness Editors

Zachary Clayton, MS
Liz Fusco, MS, RD

Disordered Eating Editors

Karen Wetherall, MS, RD
Gena Wollenberg, PhD, RD, CSSD
Julie Cooper, MS, RD

Conference Highlights Editor

Nancy Clark, MS, RD

Reviews Editor

Kristina Morales, RD

Research Digest Editors

Stacie Wing-Gaia, PhD, RD, CSSD
Kary Woodruff, MS, RD, CSSD

SCAN Notables Editor

Traci Roberts

Managing Editor

Annette Lenzi Martin
708/445-0155
annettemartin100@outlook.com

The viewpoints and statements herein do not necessarily reflect policies and/or official positions of the Academy of Nutrition and Dietetics. Opinions expressed are those of the individual authors. Publication of an advertisement in *SCAN'S PULSE* should not be construed as an endorsement of the advertiser or the product by the Academy of Nutrition and Dietetics and/or Sports, Cardiovascular, and Wellness Nutrition.

Appropriate announcements are welcome. Deadline for the Winter 2017 issue: **Sept. 1, 2017**. Deadline for the Spring 2017 issue: **Dec. 1, 2017**. Manuscripts (original research, review articles, etc.) will be considered for publication. Guidelines for authors are available at www.scandpg.org. E-mail manuscript to the Editor-in-Chief; allow up to 6 weeks for a response.

Send change of address to: Academy of Nutrition and Dietetics, 120 S. Riverside Plaza, Suite 2000, Chicago, IL 60606-6995.

Subscriptions: For individuals not eligible for Academy of Nutrition and Dietetic membership: \$50. For institutions: \$100. To subscribe: SCAN Office, 800/249-2875

Copyright © 2017 by the Academy of Nutrition and Dietetics. All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form by any means, electronic, mechanical, photocopying, recording, or otherwise, without prior written permission of the publisher.

To contact an editor listed above, visit www.scandpg.org/nutrition-info/pulse