# Mindfulness as a Skillful Approach to Inclusive Design

by
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Submitted to OCAD University
in partial fulfillment of the requirements for the degree of

Master of Design
in
Inclusive Design

Toronto, Ontario, Canada, September 2013

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# Abstract

Inclusive Design seeks to reduce barriers to fuller participation in society faced by individuals and communities whose needs, perspectives, strengths, vulnerabilities, and backgrounds may differ greatly from those of the designer(s). The potential risks and consequences of unintended exclusion, misinterpretation, oversight and so on, can be high. Many of the conceptual, philosophical, environmental and cultural biases we might have as designers (and which can influence our design choices), may exist in the form of "implicit" attitudes and may not be aligned with our conscious beliefs. Research findings by Ellen Langer (e.g.: E. Langer et al. 2008), show that certain Mindfulness strategies can reduce the impact of such hidden biases and conceptual constructs. A method for detecting implicit attitudes, using the Implicit Association Test, is explored, with an aim to propose Mindfulness strategies both as a countermeasure for implicit attitudes as well as an overall support for Inclusive Design.

# Acknowledgements

This major research project could not have been completed without the insight, guidance, patience and support of many people. First and foremost I wish to express my sincerest gratitude to my advisors, Jutta Treviranus and Peter Coppin. Thank you to Peter for helping give shape to the project, for his commitment to helping me see it through, and his expert advice throughout. Thank you to Jutta for her excellent instruction and inspiring wisdom, her confidence in me, and for her attention to my ongoing questions, despite the incredible demands on her time. Thank you to Dr. Patricia Rockman, for her willingness to act as my external advisor, her mindful and compassionate assistance and for sharing her hard work with me. Thank you to Dr. Stephen Want, who provided invaluable feedback and guidance and made the project better. To Dr. Ellen Langer, for her time, feedback, clarification, and generous assistance, I extend my deepest appreciation. Thank you to Dr. Eleanor Rosch for her insight, kindness, recommendations, and willingness to help at a critical time. Thank you to Dr. David Pereyra, for his support, and wise counsel. I owe a debt of gratitude to all of you. A special thank you to Lucian Timofte for his friendship, insight and the enjoyable work we did together throughout the program. To the kind and adventurous students who agreed to participate in my research, I am most grateful. Thank you to Aileen O'dowd, Alice Brummel, Jane Burns and Martha Ladly for providing the much-needed assistance. Thank you to Bert Shire for his good cheer and crucial assistance. A special thank you is extended to my classmates for their brilliance, humour, and vast talents. Most of all, to my parents, Pat and Carol Sherman, and to Mimi, the love of my life, I am profoundly grateful. Your patience, support, feedback, advice, and love made this possible.

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# Introduction

"Looking after oneself, one looks after others.
Looking after others, one looks after oneself."
- Sedaka Sutta, SN 145[1]

My major research project seeks to introduce the current understandings and practices collectively grouped under the term "Mindfulness" into the discourse and practice of Inclusive Design. It is my hope that this project may serve as a first step in that process.

Inclusive Design seeks to include as full a range of human diversity with respect to ability, language, culture, gender, age and other forms of human difference as is reasonably possible[2]. For individuals and communities whose needs, perspectives, strengths, vulnerabilities, and backgrounds may differ greatly from those of the designer(s), the potential consequences of unintended exclusion, misinterpretation, or oversight can be high. Many of the conceptual, philosophical, environmental and cultural biases we might have as designers (and which can influence our design choices), may exist in the form of "implicit" attitudes and may not be aligned with our conscious beliefs. As a result, researchers have struggled to develop strategies that counteract such automatic biases (Djikic, Langer, & Stapleton, 2008).

There have been some encouraging research findings, such as those found in studies conducted by Ellen Langer (2009) which show that certain mindfulness strategies can reduce the activation and impact of such hidden biases and conceptual constructs. Langer defines mindfulness as a state

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[1] The Bamboo Acrobat" (SN 47.19), translated from the Pali by Andrew Olendzki. Access to Insight, 14 June 2010, http://www.accesstoinsight.org/tipitaka/sn/sn47/sn47.019.olen.html, last accessed on September 10, 2013.

[2] http://idrc.ocadu.ca/index.php/about-the-idrc, last accessed on September 10, 2013.

in which individuals continually make novel distinctions about objects of their attention (Langer, 1989; 1997). It is my position that Mindfulness strategies, such as those proposed by Langer can be particularly effective if integrated into inclusive design pedagogy and practice for two reasons. First, her research has specifically been shown to be effective in reducing the effects of bias and stereotypes in relevant subject areas such as disability and diversity. Second, it is a nuanced, yet simple approach that can help guard against "mindless" research and design (i.e. information gathering and design outcomes affected by narrow conceptions, overlearning, biases, stereotypes, oversight and etc.).

Apart from the research of Ellen Langer, the term Mindfulness is also used to refer to traditional contemplative practices, primarily of Buddhist origin, that promote close, sustained, moment-to-moment awareness/observation of thoughts, emotions, physical sensations and stimuli from the environment (Kabat-Zinn, 1990; Kornfield, 1977). Mindfulness in this context not only serves as a core component of the Buddhist path, but has also become increasingly accepted as a part of mental health practice. While I believe that these specific practices and approaches (often loosely referred to as "Mindfulness Meditation,") are of potential benefit to Inclusive Designers, a full discussion of them is beyond the scope of this project. It is for this reason that while I will provide an overview of both models of Mindfulness for context, Ellen Langer's work will be emphasized in this project.

For the remainder this paper I will first provide a review of current therapeutic and academic approaches to Mindfulness. I will then offer a closer examination of key aspects of the work of Ellen Langer. This will be followed by a brief description of Inclusive Design. Next I will describe a study that I conducted into the possible use of the Implicit Association Test as a helpful tool for

addressing implicit attitudes within the teaching and practice of Inclusive Design. I will follow that with a discussion of the results, offer a general discussion and end with suggestions for future work.

# Literature **Review**

The majority of current mindfulness concepts and practices originated within the Buddhist traditions of Southeast Asia. In addition to being a core component of the Buddhist path of practice, over time, these techniques have been adapted for a number of behavioral and medical interventions. Each adopting subfield typically adds new terminology and practices which are often referred to collectively as "mindfulness-based interventions" (MBI). There is also a distinctly different model of mindfulness, largely in use within the fields of educational and social psychology, which is primarily derived from the work of Ellen Langer. Langer's research has been conducted almost entirely within the Western scientific perspective and has no actual basis in the Buddhist concept. While parallels have been frequently made to other mindfulness traditions (for example, in my opinion, both models serve, in part, to counteract automatic behavior), Langer remains cautious about drawing tidy comparisons (Langer, 1989).

## Mindfulness-Based Interventions

Jon Kabat-Zinn (1990) founded what is now called the Mindfulness-Based Stress Reduction (MBSR) program at the UMAS Medical Center in 1979. The aim of the program was to help patients cope with chronic pain, stress and illness through the use of mindfulness techniques. In the decades since, MBSR, and mindfulness in general, have become an accepted part of mental health practice (Goodman, 2010). The success and emerging empirical evidence demonstrating MBSR's effectiveness led to the development of other prominent mindfulness-based interventions (MBI's), such as Mindfulness-Based Cognitive Therapy (MBCT), developed by Zindel Segal,

Mark Williams and John Teasdale to treat depression, as well as Dialectical Behavioral Therapy (DBT), which was developed by Marsha M. Linehan as a treatment for Borderline Personality Disorder.

Mindfulness, as it is understood and used in most of these settings, is an English translation of the Pali word "sati" (Pali is no longer spoken but is retained within the Theravada Buddhist tradition for textual study and liturgical use). Sati has a fairly complex range of connotations but generally relates to "memory", "attention" and "awareness" (Segal et al, 2009, p.17-34). As Analayo (2003, p.60-61) summarizes: "sati entails an alert but receptive, equanimous observation. Viewed from the context of actual practice, a predominantly receptive sati is then enlivened by the quality of being diligent (ätapi), and supported by a foundation in concentration (samadhi).

The most commonly quoted definition within the context of MBI's comes from Kabat-Zinn, where mindfulness means "paying attention in a particular way: on purpose, in the present moment, and non-judgmentally" (Kabat-Zinn, 2009, p.xxviii). MBCT extends Kabat-Zinn's definition to include: "paying attention in a particular way: on purpose, in the present moment, and non-judgmentally, *to things as they are*" (Segal et al., 2007, p.54). Kabat-Zinn and his colleagues have consciously extended the term Mindfulness in several complementary ways to include mental qualities beyond sati as it becomes adapted to alleviate a range of clinical conditions - such as "non-judgment", "acceptance", and "compassion" (Segal et al, 2009, p.17-34).

There is growing evidence about the clinical, psychological and neurobiological benefits of current mindfulness-based interventions (Chiesa, 2012). However, "the investigation of mindfulness is still in its infancy and requires great sensitivity and a range of theoretical and methodological glasses to illuminate the richness and complexity of this phenomenon" (Shapiro,

Carlson, Astin, Freedman, 2006, p.12). In 2004, a two-component model was proposed as an operationalized definition: "The first component [of mindfulness] involves the self-regulation of attention so that it is maintained on immediate experience, thereby allowing for increased recognition of mental events in the present moment. The second component involves adopting a particular orientation toward one's experiences in the present moment, an orientation that is characterized by curiosity, openness, and acceptance" (Bishop et al., 2004, p.232).

## **Mindfulness Research by** Ellen Langer

Ellen Langer began researching the differences between what she referred to as "Mindless" and "Mindful" behavior in 1974, applying this distinction to many diverse areas, including psychopathology, developmental psychology, education research, political theory, and communication (Langer, Moldoveanu 2).

Langer has noted that "mindfulness is not an easy concept to define but can be understood as the process of drawing novel distinctions" (Langer, Moldoveanu 1). Other descriptions I found to be helpful described mindfulness as including the following characteristics: 1) openness to novelty, 2) alertness to distinctions, 3) sensitivity to contexts, 4) awareness of multiple perspectives, 5) orientation to the present and 6) attention to variability (Langer, 1989, 2000, 2009).

In contrast to mindfulness, mindlessness is described by Langer (1997, p.4) as 1) automatic or repetitive behavior that precludes attending to new signals, 2) over-reliance on past categorical representations and 3) action that operates from a single, context-dependent perspective. According to Langer, sources of mindlessness include: 1) overlearning and habit, 2) "mindsets" (sometimes referred to as "schemas," these can be culturally rooted or accumulated through

conditioning or patterning), and 3) premature cognitive commitments. Mindlessness differs from habit, functional fixedness, overlearning, and automatic (versus controlled) processing, in that premature cognitive commitments (e.g., Chanowitz & Langer, 1981) can be formed from a single exposure to information (Langer, 1992). Individuals are more likely to form premature cognitive commitments when they dismiss new information as irrelevant, receive information presented with absolute rather than conditional language (e.g., "is" versus "may" or "might"), or uncritically accept information from a perceived authority.

**Examples:**

Much of Langer's work emphasizes strategies that enable an individual to actively create richer and more dynamic conceptual categories. Across a number of studies, she found that the influence of an individual's initial mindless categories were reduced when they assigned more numerous distinctions to a given item or individual. She demonstrated how these strategies impact an individual's perception of both new and familiar concepts. For example, participants were presented with a series of facial images identified as belonging to a general category such as "old." Similarities and differences among the represented individuals were noticed with greater nuance when participants assigned multiple alternative categories of their own choosing. This strategy was also shown to counteract the effects of bias and stereotypes (Djikic, Langer & Stapleton, 2008).

Another mindfulness strategy involved using conditional or more open-ended language when presenting new information. For example, altering a policy document to include more conditional language had the effect of suggesting that other interpretations were possible. The conditional language was shown to increase retention, personal involvement and enjoyment

(Langer, 1997, p.28-30). In another demonstration of the same principle, Langer and Piper (1987) first assigned research participants to two groups: a 'Mindful Group' and a 'Mindless Group.' Researchers then presented both groups with a series of unfamiliar objects. For the Mindless Group, researchers employed less conditional language to assign the unfamiliar objects to conceptual categories. However, for the Mindful Group, researchers employed more conditional language to indicate what categories the objects ***might*** fall under. Later, researchers asked participants of each group to perform a task for which the expected tool was not available. The Mindful Group made more creative use of unfamiliar objects relative to the Mindless Group.

## Inclusive Design

Inclusive Design seeks to include the full range of human diversity with respect to ability, language, culture, gender, age and other forms of human difference. Inclusive Design, as it is meant in this project, specifically (though not exclusively) emphasizes and leverages the flexibility of digital technology to facilitate a high degree of individualized adaptability and customization for the user. The philosophy that informs this is that disability is a mismatch or an artifact of the relationship between a user's needs and preferences and what they are presented with (Cooper, Treviranus, Heath, 2005). For example, a visual impairment might not be a 'disability' if information is presented using audio. However, a lack of background knowledge or appropriate audio reproduction might create a context that 'disables' an individual from understanding the meaning of the information. Given this framing, an environment or design is accessible "when user needs and preferences can be addressed or matched through adaptation, re-aggregation or substitution of digital learning resources" (Treviranus, ISO/IEC 24751, 2008).

Inclusive Design can perhaps be better understood in contrast with other conceptions of "Universal Design" (UD). With its origins in the fields of Architecture and Industrial Design, UD has traditionally worked towards making objects and environments more physically accessible (e.g: Herwig, 2008, Goldsmith, 1963). The term "Inclusive Design" also happens to be in use by other designers and educators working outside the domains of Architecture and Industrial Design (e.g.: Service, Web, Mobile apps etc.), who, while expanding the understanding of "universal" or "inclusive" to be similar to the definition above, have largely focused on design that is accessible to as many people as possible without emphasizing adaptation or customization for individual users (e.g.: www.inclusivedesigntoolkit.com).

# The Implicit Association Test

## Background

The approach I adopted for this investigation was inspired by a study conducted by Djikic, Langer, and Stapleton (2008) that demonstrated how mindfulness techniques reduced the impact of stereotypes. My intention was to extend this research in order to find out if similar mindfulness strategies could reduce the effects of implicit attitudes and stereotypes within the practice of inclusive design. The approach I adopted can be understood in relation to the following example, taken from Djikic, Langer, and Stapleton (2008):

An experimental group was "primed" with the association "old age" by showing participants a picture. Researchers tested this priming effect by employing a method developed by Bargh, Chen and Burrows (1996), which measured changes in walking speed. Bargh et al. showed that individuals who were primed with the elderly stereotype walked more slowly than a control group. While I was not interested in priming individuals, I was interested in a simple way to test the implicit attitudes of volunteers from the Masters in Inclusive Design program in order to assess the actual need for a mindfulness strategy. This search led me to the Project Implicit website (https://implicit.harvard.edu/implicit/takeatest.html), which hosts a demonstration version of the Implicit Association Test (IAT). The Implicit Association Test (Greenwald et al. 1998) is one of a large variety of widely used measures for research on implicit attitudes (Gawronski, Bodenhausen, 2006).

Like the walking speed test used by Langer (Djikic, Langer, and Stapleton, 2008), the IAT is based on the principle that when people perform tasks that are compatible with their automatic (implicit) associations, they perform more quickly than if the task conflicts with their associations, which causes them to slow down (Rudman, 2008).

The online test is freely available, provides test results, but does not provide the response time data itself. This would be sufficient to detect bias and determine the usefulness of the test relative to my aims. It was decided that a good time to try the test would be the two-week summer intensive for the incoming cohort. Just prior to each school year, the Masters in Inclusive Design program conducts a preliminary two-week "intensive" for the incoming cohort. It is an immersive, hands-on, learning environment intended to expose the students to the range of issues and concepts addressed by the program. The title for the intensive is "Unlearning and Questioning". As outlined in the course description, during the intensive students "critically examine explicit and implicit values and assumptions. Students practice educational engagement that encourages divergent thinking, constructive critique and attention to the full range of human diversity through a variety of learning experiences". As such, while not an overtly controlled use of Langer's strategies, I believed the intensive afforded an opportunity to observe, and hopefully measure the effects of a learning environment that I believe promotes mindfulness.

## IAT Questions

There were two main questions I attempted to answer through the use of the Implicit Association Test:

1) To what extent, and in what way, do implicit biases affect students entering the Masters in Inclusive Design program at OCAD University?

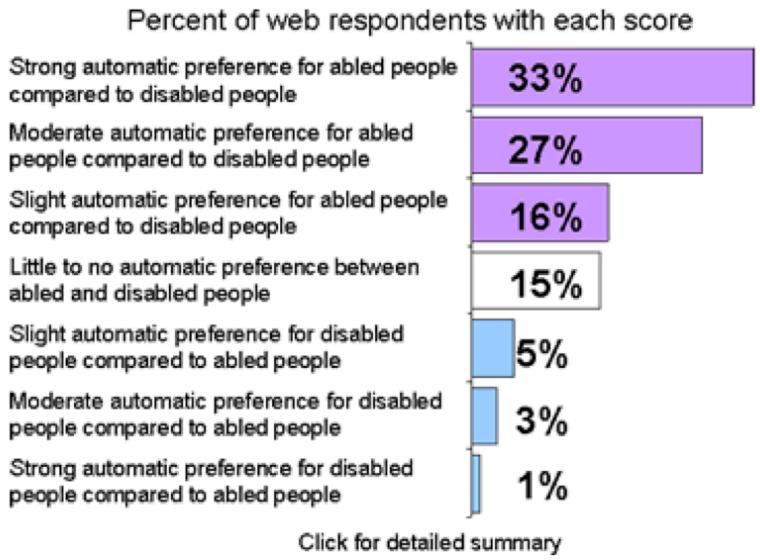
2) Would participating in the preliminary two-week intensive have a measurable affect on the results if participants were tested again afterwards?

## Sample Size

In this setting the maximum possible number of participants was limited both by the class size and number of students within the group who volunteered to participate. Ten students, who were able to complete the tests for both sessions, out of a class size of approximately twenty people were recruited. The data gathered from such a small sample size would later be supplemented by a post-intensive interview with the instructor in order to obtain her own subjective observations as a basis of comparison. Given these limits, my intent was to gain a fairly modest degree of insight within a specific context, in order to guide future research, rather than produce statistically significant data.

## Resources

The version of the IAT used was the freely available online "demonstration" test hosted on the Project Implicit website (https://implicit.harvard.edu/implicit/takeatest.html). A significant difference with this version from a more standardized one is that it does not provide a numerical score. Instead it classifies the results according to a seven-point scale comprised of descriptive categories (below).




## Location

The  test was conducted on location, both at the very start and very end of the intensive. This was done in order to reduce the impact of the test on the learning environment and schedule as much as possible. This resulted in the test being conducted in two different locations. Because it was the first day and there was a higher degree of background activity and minor technical issues with some of the computers, the first location was less optimal than the second.

## Method

Participants: Ten individuals participated in the study (6 females and 4 males). Participants were recruited from among an incoming cohort of students who attended the "Unlearning and Questioning" two-week intensive from the Masters in Inclusive Design program at OCAD University.

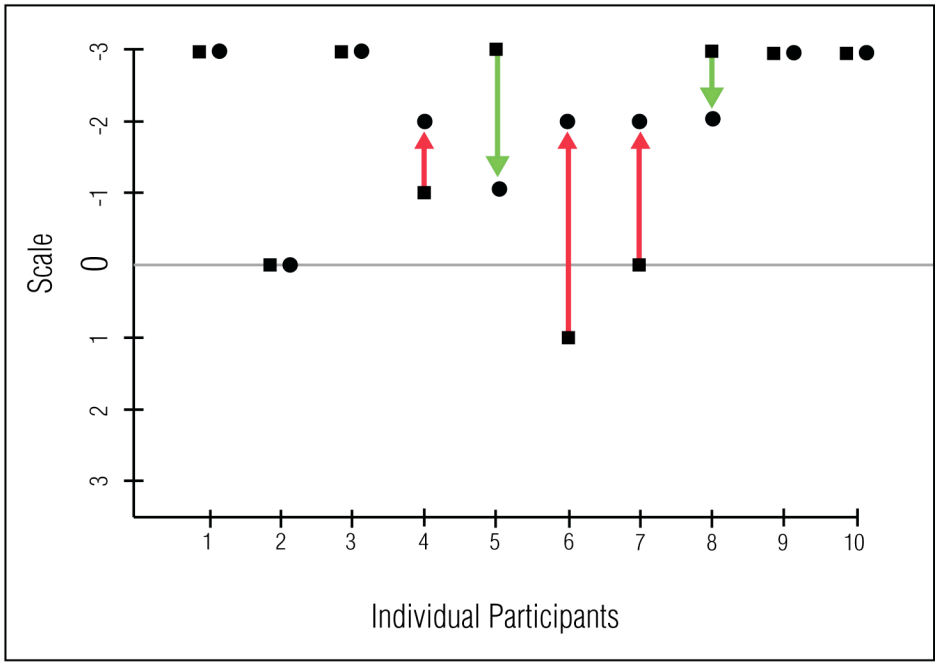
## Procedure

Students were informed about the nature and purpose of the study at the time of recruitment. On the first day of the intensive, the participants were brought to a separate room and each were provided a computer, which was connected to the Project Implicit website via the Internet. Instructions on how to navigate and complete the test were provided and a colleague was on-hand to offer assistance and record the results. Each participant completed four separate tests according to four categories: Age; Disability; Sexual Orientation and Race. This procedure was repeated during the second testing session at the end of the intensive.

As a control, I referenced the figures provided by Project Implicit that are shown alongside the individual participant results in each of the four tests respectively (Age, Disability, Sexual Orientation and Race). These figures are comprised of data collected from web respondents, represented in percentages, according to the seven-point descriptive scale (shown above). However, due to the small sample size, comparisons with results gathered by Project Implicit, which are taken from a far greater sample size, were only to be considered as a very rough indicator at most. The reason for this is that with a very large sample size, a number such as "10%" represents enough respondents to indicate a degree of significance, whereas in this case "10%" would only represent one participant. As such I would not be able to rule out "noise" in the data, such as momentary distraction, which could cause a lag in response time, as a factor.

# Results

## Disability IAT




**Scale:**
-3: Strong automatic preference for Abled people compared to Disabled people
-2: Moderate automatic preference for Abled people compared to Disabled people
-1: Slight automatic preference for Abled people compared to Disabled people
0: Little or no automatic preference between Abled and Disabled people
1: Slight automatic preference for Disabled people compared to Abled people
2: Moderate automatic preference for Disabled people compared to Abled people
3: Strong automatic preference for Disabled people compared to Abled people

■ Test result at intensive start
● Test result at intensive end
▲ Increased bias
▲ Decreased bias
▲ Equal & reversed bias

***Figure 1. Disability IAT***

**Table 1: Interpretation of Results of Disability IAT**

## Disability IAT

1) Test 1: Strong bias for Abled / Test 2: Strong bias for Abled / Move: n/c

2) Test 1: No bias / Test 2: no bias / Move: Ideal

3) Test 1: Strong bias for Abled / Test 2: Strong bias for Abled / Move: n/c

4) Test 1: Slight bias for Abled / Test 2: Moderate bias for Abled / Move: Unfavorable

5) Test 1: Strong bias for Abled / Test 2: Slight bias for Abled / Move: Favorable

6) Test 1: Slight bias for Disabled / Test 2: Moderate bias for Abled / Move: Unfavorable

7) Test 1: No bias for / Test 2: Moderate bias for Abled/ Move: Unfavorable

8) Test 1: Strong bias for Abled / Test 2: Moderate bias for Abled / Move: Favorable

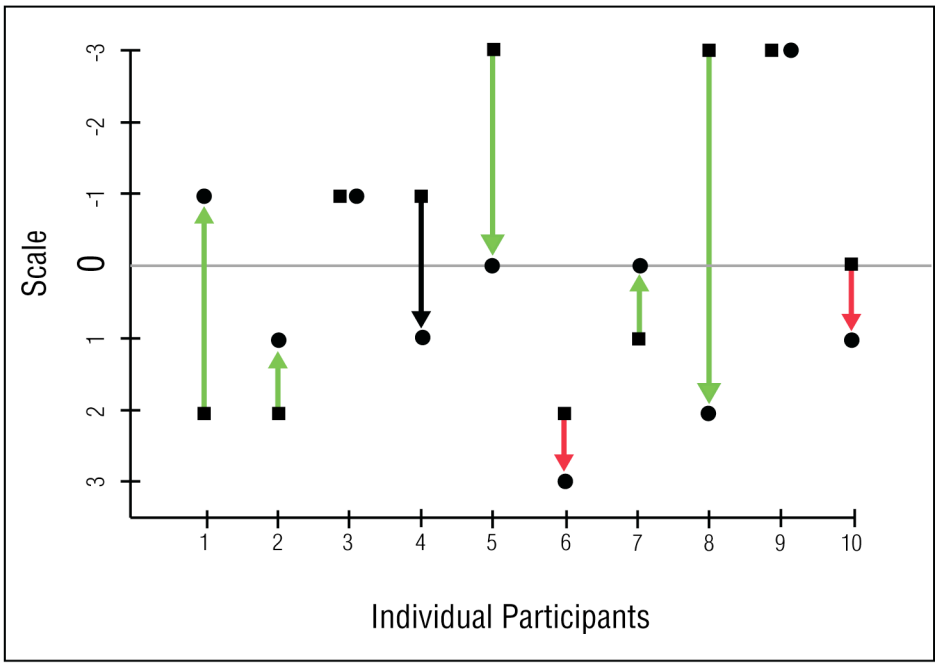
9) Test 1: Strong bias for Abled / Test 2: Strong bias for Abled / Move: n/c

10) Test 1: Strong bias for Abled / Test 2: Strong bias for Abled / Move: n/c

The Disability IAT results reflected a strong bias in favor of "Abled" as well as a high instance of "no change" between the two test sessions.

Comment: Within the classroom setting, the instructor initially observed fairly strong “us-them” language in this subject area, which dissipated noticeably towards the end of the intensive. With respect to disability and “able-ism”, a “deconstruction of the disabled/nondisabled binary was explored”. However, according to the instructor, the schedule was such that there was insufficient time to adequately address disability culture and pride.

## Age IAT




**Scale:**

-3: Strong automatic preference for Young people compared to Old people
-2: Moderate automatic preference for Young people compared to Old people
-1: Slight automatic preference for Young people compared to Old people
0: Little or no automatic preference between Young and Old people
1: Slight automatic preference for Old people compared to Young people
2: Moderate automatic preference for Old people compared to Young people
3: Strong automatic preference for Old people compared to Young people

■ Test result at intensive start
● Test result at intensive end
▲ Increased bias
▲ Decreased bias
▲ Equal & reversed bias

*Figure 2. Age IAT*

**Table 2: Interpretation of Results of Age IAT**

## Age IAT

1) Test 1: Moderate bias for Old / Test 2: Slight bias for Young / Move: Favorable

2) Test 1: Moderate bias for Old / Test 2: Slight no bias for Old / Move: Favorable

3) Test 1: Slight bias for Young / Test 2: Slight bias for Young / Move: n/c

4) Test 1: Slight bias for Young / Test 2: Slight bias for Old / Move: reversed

5) Test 1: Strong bias for Young / Test 2: No bias / Move: Favorable

6) Test 1: Moderate bias for Old / Test 2: Strong bias for Old/ Move: Unfavorable

7) Test 1: Slight bias for Old / Test 2: No bias / Move: Favorable

8) Test 1: Strong bias for Young / Test 2: Moderate bias for Old / Move: Favorable

9) Test 1: Strong bias for Old / Test 2: Strong bias for Old / Move: n/c

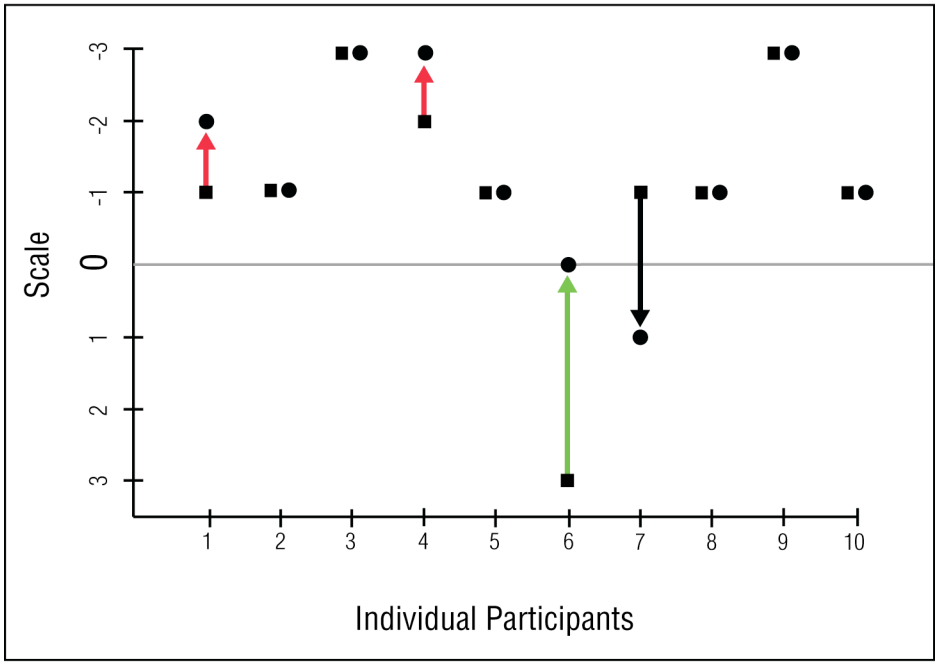
10) Test 1: No bias / Test 2: Slight bias for Old / Move: Unfavorable

The Age IAT seems to have indicated the most movement from a biased starting point (in both Young and Old bias ranges), towards the "little or no bias" category. As well, it showed fewer instances of "no change" than the other tests.

Important to note however, is that at the time of testing and writing, unlike the other versions of the test used, the Age IAT would complete the test once, cycle back to the start and run the test again. At the end of the second test it would provide both scores. I was not able to confirm with Project Implicit if this was intentional. In each case I used only the first of the two scores. While this potentially brings the test results on their own into question, the attention given to this subject area during the intensive may be meaningful if the results are looked at in context.

Comment: According to the instructor there was an apparent general perception of people who are older as being technically illiterate, incapable of new learning, and in need of charity and help. There was also an initially strong use of “us-them” language. The instructor addressed this directly and following her lead, the group took the thread further, noting presumptions and questioning them independently.

## Sexual Orientation IAT




**Scale:**
-3: Strong automatic preference for Straight people compared to Gay people
-2: Moderate automatic preference for Straight people compared to Gay people
-1: Slight automatic preference for Straight people compared to Gay people
0: Little or no automatic preference between Straight and Gay people
1: Slight automatic preference for Gay people compared to Straight people
2: Moderate automatic preference for Gay people compared to Straight people
3: Strong automatic preference for Gay people compared to Straight people

■ Test result at intensive start
● Test result at intensive end
▲ Increased bias
▲ Decreased bias
▲ Equal & reversed bias

***Figure 3. Sexual orientation IAT***

**Table 3: Interpretation of Results of Sexual Orientation IAT**

## Sexual Orientation IAT

1) Test 1: Slight bias for Straight / Test 2: Moderate bias for Straight / Move: Unfavorable

2) Test 1: Slight bias for Straight / Test 2: Slight no bias for Straight / Move: n/c

3) Test 1: Strong bias for Straight / Test 2: Strong bias for Straight / Move: n/c

4) Test 1: Moderate bias for Straight / Test 2: Strong bias for Straight / Move: Unfavorable

5) Test 1: Slight bias for Straight / Test 2: Slight bias for Straight / Move: n/c

6) Test 1: Strong bias for Gay / Test 2: No bias / Move: Favorable

7) Test 1: Slight bias for Straight / Test 2: Slight bias for Gay / Move: equal, reverse

8) Test 1: Slight bias for Straight / Test 2: Slight bias for Straight / Move: n/c

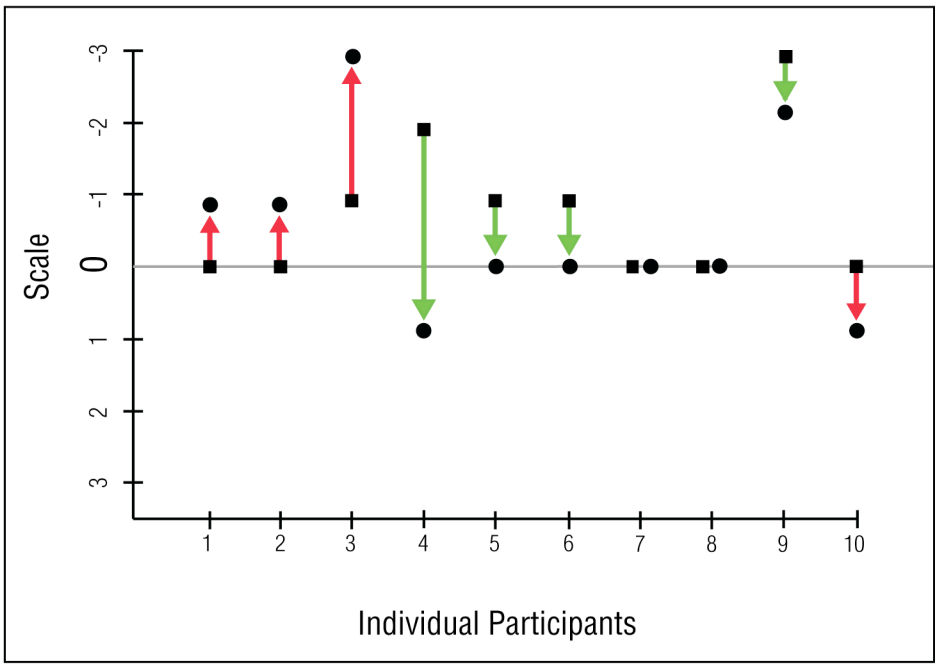
9) Test 1: Strong bias for Straight / Test 2: Strong bias for Straight / Move: n/c

10) Test 1: Slight bias for Straight / Test 2: Slight bias for Straight / Move: n/c

The Sexual Orientation IAT showed a high number of results reflective of a bias towards "straight", but a greater tendency towards “moderate” and “slight” bias than “strong” bias. It also showed the highest instance of "no change" from among the four tests.

Comment: Within the classroom setting the instructor sensed that a fairly large number of students who, based on their observable language and reaction might not have been exposed to LGBT rights and discourse. The approach in this subject area was to let this topic “seep” into the conversation “organically” or indirectly, as a natural, usual and assumed attitude.

## Race IAT




**Scale:**

-3: Strong automatic preference for White people compared to Black people
-2: Moderate automatic preference for White people compared to Black people
-1: Slight automatic preference for White people compared to Black people
0: Little or no automatic preference between White and Black people
1: Slight automatic preference for Black people compared to White people
2: Moderate automatic preference for Black people compared to White people
3: Strong automatic preference for Black people compared to White people

■ Test result at intensive start
● Test result at intensive end
▲ Increased bias
▲ Decreased bias
▲ Equal & reversed bias

***Figure 4. Race IAT***

**Table 4: Interpretation of Results of Race IAT**

## Race IAT

1) Test 1: No bias for White / Test 2: Slight bias for White / Move: Unfavorable

2) Test 1: No bias for White / Test 2: Slight bias for White / Move: Unfavorable

3) Test 1: Slight bias for White / Test 2: Strong bias for White / Move: Unfavorable

4) Test 1: Moderate bias for White / Test 2: Slight bias for Gay / Move: Favorable

5) Test 1: Slight bias for White / Test 2: No bias / Move: Favorable

6) Test 1: Slight bias for White / Test 2: No bias / Move: Favorable

7) Test 1: No bias / Test 2: No bias / Move: Ideal

8) Test 1: No bias / Test 2: No bias / Move: Ideal

9) Test 1: Strong bias for White / Test 2: Moderate bias for White / Move: Favorable

10) Test 1: No bias / Test 2: Slight bias for Black / Move: Unfavorable

The Race IAT had the highest number of results showing "little or no bias" in the first testing session. During the second test session these same participants either showed "no change" or only shifted one category in either direction.

Comment: Within the classroom setting the group was very international and reflected a considerable mix of race and religion. The group bonded well and seemed to celebrate the diversity in the room.

# Discussion **of Results**

Question 1): To what extent, and in what way, do implicit biases affect students entering the Masters in Inclusive Design program at OCAD University?

Overall, the results suggested the presence of varying degrees of bias among the participants. As well, the results themselves were largely consistent with the separate, subjective observations offered by the instructor in the post-intensive interview.

Of particular interest to me were the results of the Race IAT. In combination with the observations of the instructor, the results may underscore something about the potential positive impact diversity can have in a collaborative or group setting in terms of reducing the impact of implicit associations. This may suggest possible avenues of future research in both the domains of mindfulness study and Inclusive Design.

Question 2): Would participating in the preliminary two-week intensive have a measurable affect on the results if participants were tested again afterwards?

In terms of showing indications of change directly attributable to participation in the intensive, the results were less clear. Given the small sample size, the change in location, and a degree of background activity during the first session, a shift of one category in the scale was not considered meaningful enough to interpret without interviewing each of the participants. As the scoring and identification data were stored separately to protect the privacy of the participants, this was never considered an option. For this reason, only shifts of two or more categories, in either direction,

would be viewed as a potential indicator. Ongoing and more controlled research, using a standardized version of the Implicit Association Test, would be needed to more fully assess its value in reliably showing change data of this nature. However, given the relative limitations of the test conditions of this study, the results appear to me to suggest correlations with observations made in the classroom by the instructor, which I interpret as a positive reflection on the robustness of the IAT.

From the start of this project, I had a strong sense that the principles of inclusive design were highly compatible with mindfulness principles and would lead to shared destinations and discoveries. This sense has grown stronger over time.

While not wishing to blur the distinctions that may exist between the two, in my opinion it is possible to compare the ideas of Inclusion and Mindfulness in ways that show alignment between them. Indeed, in a number of discussions with my peers and advisors, I have found that using Langer's Mindfulness terminology while discussing Inclusive Design (even to the extent of literally saying "Mindful" in place of "Inclusive") resulted not only in consistency of meaning, but in some cases enhanced clarity. "Creating new categories" and "making novel distinctions" are defining features of Langer's concept of Mindfulness (e.g. Langer, 2009). I would say, quite literally, that when we actively make novel distinctions, create new categories, are attentive to variability, are sensitive to context and become aware of multiple perspectives (all attributes of Mindfulness), we are "including" new information. Moreover, as with Mindfulness, we do this in order to creatively transcend and remove unwanted limitations, perceptions, divisions and the countless obstacles that prevent full participation in society. Similarly, when we are Mindless, we exclude such

information and potential from our experience. The causes of Mindlessness that Langer identifies, such as operating from a single perspective, or interpreting and responding to information based on unexamined mindsets (schemas) and premature cognitive commitments, in my opinion, are the very causes of social exclusion and damaging stereotypes, which Inclusive Design aims to address.

Interestingly, in her books, Langer refrains from explicitly stating "how" to be Mindful (at least in ways that can be mindlessly followed like instructions), preferring instead to illustrate the costs of Mindlessness and "why" we should strive to be Mindful. This is done primarily through using examples from her studies and research. The reason for this is simply that Mindfulness is intrinsically and dynamically rooted in the present and in context. In a similar way, Inclusive Design pedagogy (at least in my own training) involves discussion, collaboration and learning by doing, hands-on, rather that dictating exactly how to be Inclusive. While both Mindfulness and Inclusive Design share this (necessary) characteristic, what was striking to me as I increasingly saw meaningful relationships (and even a degree of overlap between the two), was how simply and clearly Langer's analysis of Mindfulness and Mindlessness describes, without reducing or defining, some of the underlying mechanisms and strategies that lie at the heart of an Inclusive approach to Design, but which may not always be obvious.

On occasion I have been asked how, or in what way, Mindfulness/Mindlessness differs from other similar (two-pole) constructs such as critical/uncritical, scientific/unscientific, and indeed, Inclusive/Exclusive. Langer (1992) explains, using the example categories of controlled vs. automatic processing, that while they can appear quite similar, they are "orthogonal" to each other. One can be "mindlessly controlled" or "mindfully automatic". To illustrate the implications

this can have for Inclusive Design, if we were to figuratively “overlay” the concepts of Mindfulness and Inclusive Design (like two images) we might have something like a match or a more detailed image. However, if we “turn” the Mindfulness concept/image ninety degrees, we might have what I believe to be a wider vocabulary and set of tools (or a four-pole map) to potentially address a more diverse and elusive or subtle range of relevant problems than we might otherwise. As well, I suggest that Mindfulness can function as a “reflective mechanism” to help detect and guard against agendas and biases or Mindlessness creeping in to our Inclusive Design practice through unintentional stereotypes, setting up in/out groups like "includers/excluders" and so on. In other words, one can be “mindlessly inclusive” or “mindfully exclusive”.

## Suggestions and Conclusion

I believe the initial findings that resulted from conducting the Implicit Association Test indicate that it can be a potentially valuable tool within an instructional setting, by helping identify areas that may require attention and resources, and which may change from year to year. As practitioners, who aspire to be inclusive in our design work, an awareness of our own hidden biases can help us to examine, reflect and act more in accordance with our true intentions. I therefore suggest that further study into the possible uses of the Implicit Association Test would be worthwhile.

I suggest that the approach found in Ellen Langer's work shows a high degree of conceptual and ethical compatibility with Inclusive Design. For this reason, I recommend considering Mindfulness as a form of overall curriculum support. Rather than propose specific ways mindfulness can or should be incorporated into the teaching and practice of Inclusive Design, however, it is important that there first be an interest among practitioners in doing so. I hope that my project will serve as a starting point for future discussion and exploration along these lines.

To conclude, I believe that the similarities between Mindfulness and Inclusive Design stem, in many cases, from shared objectives, while some of the differences may come from the original contexts and nuances embedded in the respective research and terminologies. Both approaches appear to me to equally support and challenge each other and can expand the available vocabulary and references that can be drawn on to frame different problems and challenges. Different people with different backgrounds, sensibilities and areas of focus may gravitate more

towards one than the other, or see great value in both approaches. This to me is both Mindful and Inclusive.

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