Factors associated with healthy and unhealthy workplace eating behaviours in individuals with overweight/obesity with and without binge eating disorder

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Summary

Objective

Most Americans spend an average of 8 hours per day in the workplace. Current understanding of eating behaviours in the workplace and their association with overweight, obesity and binge eating disorder (BED) is limited. Workplace eating behaviours and weight-related self-efficacy were examined in a sample of 98 individuals with overweight or obesity, with or without BED.

Design

Participants completed the Weight Efficacy Lifestyle Questionnaire, Work and Social Adjustment Scale, Worker’s Perception of Environmental Factors, and a Workplace Questionnaire.

Results

Eating unplanned food occurred on average 2.43 times per week (SD = 3.37), and eating unplanned food even when meals were brought from home occurred on average 1.28 times per week (SD = 1.84). Individuals with BED purchased lunch even when they brought food from home significantly more frequently than did individuals without BED. Those with BED also reported significantly poorer work and social adjustment related to binge eating as compared with those without BED. The most significant barriers to healthy eating in the workplace were coworker influence, eating more food in general and more junk food in response to stress, eating unplanned food at work and time constraints.

Conclusions

These factors may be important to target in weight-loss treatment to increase individuals’ weight loss success. As individuals with BED may be the most vulnerable to eating unplanned foods, clinicians may want to focus on this potential barrier in BED treatment.

Keywords: Binge-eating disorder, obesity, overweight, workplace eating.
diet by offering cheap foods of low nutritional value and easily accessible vending machine foods (4). Continually being exposed to food makes it more likely that individuals will consume more food (5,6). Stress at work also may be an important variable in the relationship between work environment and weight. As stress and burnout increase, eating awareness (7) and intuitive eating increase (8,9). For individuals of a healthy weight, work stress was related to increased risk of weight gain over 5 years (10). Individuals who are overweight tend to eat more in response to stress when compared with those of a healthy weight (11) and therefore may be even more vulnerable to the impact of work stress on weight. Among individuals with overweight or obesity, work stress has been linked to increased body mass index (BMI) (12–14), greater risk for central obesity (12), and high fat intake (13). The relationship between work stress and eating behaviour is an important one to examine, especially among individuals with overweight or obesity.

Another important factor to consider, as it confers increased overweight and obesity risk, is binge eating disorder (BED) (15). BED, a psychiatric disorder included in the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5), is characterized by frequent binge eating (i.e. consuming large amounts of food in a relatively brief period of time) without the presence of regular compensatory behaviours, a subjective feeling of loss of control during binge eating and at least three associated factors (eating more rapidly; eating until uncomfortably full; eating large amounts despite not being hungry; eating alone due to embarrassment; or feeling disgusted, depressed, or guilty after eating) (16). BED is categorized by severity as follows: mild (1 to 3 episodes weekly), moderate (4 to 7 episodes weekly), severe (8 to 13 episodes weekly) and extreme (14 or more episodes weekly). Lifetime prevalence of BED in the United States is estimated at 2.6 % among the general population, however, lifetime prevalence is estimated at 30.70% and 36.20% among individuals with overweight or obesity, respectively, within individuals seeking weight-loss treatment (15). In addition to being at greater risk for obesity, individuals diagnosed with BED, as compared with those without BED, are at greater risk for developing mood and anxiety disorders (17–19). BED also can cause functional impairment in the workplace. For example, binge eating predicts higher rates of absenteeism from work in men (20) and greater work productivity impairment in both sexes (21). Those with BED and overweight or obesity, therefore, may be particularly vulnerable to workplace stress and unhealthy eating patterns as compared with those without BED.

A factor that may impact the relationship between work-related stress and excess weight is self-efficacy. Self-efficacy, defined as confidence in one’s ability to enact behaviour change, may be instrumental to weight loss (22) and consistently predicts weight change in individuals with and without BED (23–26). Thus, to enhance current understanding of how the workplace impacts eating behaviors, it is important to examine self-efficacy, especially in the presence of stress and BED.

In summary, many Americans spend a large proportion of their time at work (3), an environment where unhealthy food frequently is available, and where stress levels often are high. Yet little is known about the relationships among workplace eating behaviours, stress, and self-efficacy among those with overweight or obesity, and current understanding of these relationships among individuals with BED is even more limited. To address limitations in the literature, this study aimed to (i) examine eating behaviours and barriers to healthy eating in the workplace among individuals with overweight or obesity, (ii) compare those with and without BED, (iii) explore social, emotional, and environmental correlates of workplace eating behaviours including (iiia) factors that facilitate healthy eating and (iiib) those that serve as barriers. It was hypothesized that unhealthy workplace eating and influences would be prevalent within this sample and that individuals with BED would report poorer work-related eating behaviours (e.g. higher intake of ‘junk food’, unplanned food, and larger amounts of food) compared with individuals without BED. Lower eating self-efficacy was hypothesized to be associated with higher levels of unhealthy workplace eating behaviours.

**Method**

**Participants**

Participants were 98 adults (75 women and 23 men) with overweight or obesity (BMI ≥ 25 kg/m²) recruited through primary care provider referrals and flyers placed in waiting/patient rooms for a behavioural weight-loss treatment study being performed in primary care centres in a large urban university-based medical healthcare centre. Exclusion criteria included BMI ≥ 55 kg/m² (individuals with a BMI above 55 kg/m² were referred for more intensive weight-loss treatments); under 18 years of age; over 65 years of age; current/planned pregnancy; breastfeeding; serious mental illness (e.g. schizophrenia and bipolar disorder); or uncontrolled liver disease, hypertension (blood pressure > 160/95 mmHg), thyroid disease (thyroid-stimulating hormone > 6.75 mIU/L) or diabetes (hemoglobin A1c > 8.0). Of the 98 participants who
Participants fell within the following BMI categories: < 30 kg/m², 28.38% (n = 20) Class 1 obesity (BMI of 30 to <35 kg/m²), 22.97% (n = 17) Class 2 obesity (BMI of 35 to <40 kg/m²) and 22.97% (n = 17) Class 3 obesity (BMI of 40 kg/m² or higher). Twenty (27.00%) participants met DSM-5 BED criteria.

Measures

**Beck Depression Inventory**

The Beck Depression Inventory (BDI) (27) is a 21-item self-report measure that assesses current depression level. Higher scores indicate increased depression. A total score of 21 or above suggests presence of depression. The BDI has excellent validity and reliability, with internal consistency ranging from 0.81 to 0.86 (28). In this sample, Cronbach’s α was 0.87.

**Eating Disorder Examination**

The Eating Disorder Examination (EDE) is a semi-structured interview for assessing eating disorders and diagnosing BED (29); edited to correspond with DSM-5). The EDE includes an overall score (EDE-Global) and four subscales: restraint, eating concern, shape concern, and weight concern. The EDE has demonstrated good interrater (0.65 to 0.96) and test–retest reliability (0.50 to 0.88) (30). The EDE-Global score provides an index of eating disorder symptomatology, with higher scores reflecting greater severity. Cronbach’s α for EDE-Global with the current sample was 0.87.

**Weight Efficacy Lifestyle Questionnaire**

The Weight Efficacy Lifestyle Questionnaire (WELQ) (31) is a 20-item measure that evaluates self-efficacy and includes five situational factor subscales: negative emotions, availability, social pressure, physical discomfort, and positive activities. Items were rated between 0 (Not Confident) and 9 (Very Confident). Cronbach’s α for each scale ranges from 0.70 to 0.90 (31). In this sample, Cronbach’s α for scales were as follows: WELQ-Negative Emotions 0.90, WELQ-Availability 0.76, WELQ-Social Pressure 0.87, WELQ-Physical Discomfort 0.87, and WELQ Positive Activities 0.74.

**Work and Social Adjustment Scale**

The Work Social Adjustment Scale (WSAS) (32) is a self-report, 5-item scale that measures functional impairment related to work and social activities with good internal consistency (Cronbach’s α across multiple time points ranges from 0.79 to 0.94); test–retest reliability is 0.73 (32). For this study, the measure was adapted to binge eating as the specified problem. For example, ‘because of my binge eating, my ability to work is impaired.’ Items were scored between 0 (Not at all) and 8 (Extremely), and an average impairment score was used for data analysis. Cronbach’s α for WSAS in this sample was 0.81.

**Worker’s Perception of Environmental Factors**

The Worker’s Perception of Environmental Factors (WPEF) (33) is a self-report measure, consisting of eight multiple choice items examining factors at work that influence decisions to eat healthy or junk food and to exercise. Only the items pertaining to food choice were analysed in this study (i.e. items 3, 4, 6, and 8). For example, ‘Does stress at your worksite influence you to: eat larger amounts of food, eat less food, eat more junk food, eat healthier food’. Item responses were examined, as scoring is not available for the WPEF.

**Workplace Questionnaire**

To examine eating behaviours in the workplace, a self-report questionnaire was created that included the following four questions: 1. How many times a week do coworkers bring food in to share?’, 2. On average, how many times a week (can be more than once a day) do you eat this food?’, 3. How many times a week do you eat food at work that was not planned?’ (i.e. unplanned food), and 4. How many times a week do you buy food for lunch even though you brought your meal from home?’ Participants responded with the number of times/days for each item.

**Procedures**

Participants provided informed consent. Master-level or doctoral-level psychology clinicians trained in eating and weight disorders assessed participants for BED via gold standard semi-structured interviews edited for DSM-5 criteria (i.e. edited Eating Disorder Examination and the
Structured Clinical Interview for DSM-IV Axis 1 Disorders; (29,34)). These psychology clinicians received extensive and ongoing interview training and supervision, including initial in-person supervision during interviews and eventual review of taped interviews. The psychology clinicians also participated in weekly supervision where any questions regarding BED diagnosis were discussed. The clinicians were blinded to the hypotheses of the current study. Trained clinicians measured participants’ height using a wall measure and weight with a large capacity digital scale. Participants then completed study questionnaires. Study procedures were reviewed and approved by the university’s Institutional Review Board.

Data analyses

Descriptive statistics were computed to examine participant characteristics. Group differences were examined using independent samples t-tests for continuous variables and chi-square for categorical variables. Correlations among the various measures were examined using Pearson’s r for continuous variables and Kendall’s Tau b for dichotomous variables. Because there were few significant differences between the groups with and without BED, correlations for the entire sample were examined.

Table 1 T-test analyses between participants with and without binge-eating disorder (BED) for the Beck Depression Inventory (BDI), Eating Disorder Examination (EDE), Weight Lifestyle Efficacy Questionnaire (WELQ), Work and Social Adjustment Scale (WSAS), and Workplace Questionnaire (WQ)

|                     | Total Sample | BED           | Non-BED        | t-test analysis |
|---------------------|--------------|---------------|----------------|----------------|
| **BDI (N = 74)**    |              |               |                |                |
| Mean (SD)           | 7.93 (6.73)  | 10.30 (8.03)  | 7.06 (6.04)    | t(72) = -1.87, p = 0.07 |
| **EDE-global (N = 74)** |            |               |                |                |
| Mean (SD)           | 1.78 (.94)   | 2.12 (.88)    | 1.66 (.93)     | t(73) = -1.93, p = 0.06 |
| **EDE-restraint**   | 1.32 (.95)   | 1.46 (.72)    | 1.27 (1.03)    | t(73) = -0.76, p = 0.45 |
| **EDE-eating concern** | .82 (1.06)  | 1.25 (1.13)   | 0.66 (1.00)    | t(72) = -2.16, p = 0.03 |
| **EDE-shape concern** | 2.58 (1.39) | 3.14 (1.31)   | 2.38 (1.38)    | t(72) = -2.13, p = 0.04 |
| **EDE-weight concern** | 2.40 (1.25) | 2.64 (1.25)   | 2.31 (1.25)    | t(72) = -1.00, p = 0.32 |
| **WELQ (N = 74)**   |              |               |                |                |
| Mean (SD)           | 19.88 (10.91)| 18.15 (12.94) | 20.52 (10.11)  | t(71) = 0.82, p = 0.41 |
| **WSAS (N = 74)**   |              |               |                |                |
| Mean (SD)           | 17.03 (8.58) | 14.20 (9.10)  | 18.07 (8.22)   | t(71) = 1.68, p = 0.10 |
| **Total Sample**    | 21.76 (10.01)| 19.55 (10.47) | 22.00 (9.81)   | t(71) = 1.14, p = 0.26 |
| **Physical discomfort** | 26.18 (8.73) | 23.95 (9.39)  | 27.00 (8.42)   | t(72) = 1.34, p = 0.18 |
| **Positive activities** | 23.95 (8.96)| 21.00 (8.83)  | 25.04 (8.56)   | t(72) = 1.79, p = 0.08 |
| **WQ (n = 68–71)**  |              |               |                |                |
| Times per week coworkers bring food | 1.62 (1.76) | 1.44 (1.76)  | 1.67 (1.77)    | t(65) = 0.47, p = 0.64 |
| Times per week this food is eaten | 1.34 (2.13) | 1.73 (3.39)  | 1.15 (1.26)    | t(63) = 0.19, p = 0.85 |
| Times per week unplanned food is eaten | 2.43 (3.37) | 2.53 (3.36)  | 2.64 (3.43)    | t(67) = 0.12, p = 0.90 |
| Times per week lunch is purchased even when food is brought from home | 1.28 (1.84) | 2.00 (2.47)  | 0.91 (1.37)    | t(68) = -2.20, p = 0.03 |

Results

The groups with and without BED did not significantly differ on age, sex, race/ethnicity, marital status, level of education, sexual orientation or BDI. Three (4.20%) participants met criteria for depression based on BDI score. Participants with BED had a significantly higher average BMI than those without BED (t (72) = −3.01, p = 0.004). Table 1 shows the descriptive statistics for workplace eating (Workplace Questionnaire (WQ)), work and social adjustment (WSAS), weight self-efficacy (WELQ), depression (BDI) and eating disorder symptomology (EDE), along with t-tests examining differences on these measures between individuals with and without BED. Figure 1 shows how many times coworkers brought food to work, and Figure 2 shows how often participants ate that food. On average, participants ate unplanned food 2.43 times per week (SD = 3.37; Figure 3) and purchased lunch even when they brought food from home 1.28 times per week (SD = 1.84; Figure 4). The group with BED reported a statistically significant higher frequency of purchasing lunch even when food was brought from home and reported significantly poorer adjustment on the WSAS. Figure 5 shows the percentage of time participants ate food specifically brought by coworkers. More than half of the participants reported weekly exposure to
food brought in by coworkers (46 participants of 74, 62.16%). Of these 46 participants, over half reported eating this food 100% of the time (27 participants of 46, 58.70%).

Table 2 shows the descriptive statistics for workplace environment (WPEF). Eating junk food in response to stress at work was the most frequently reported factor influencing eating behaviour, with 48.65% of the sample reporting this behaviour. Eating more food overall in response to stress at work was the second highest reported behaviour at 40.54% from the whole sample. Chi-square analyses revealed no significant differences between individuals with and without BED on any of these items.

The results of the correlation analyses between the workplace measures and measures of depression, eating disorder symptomology, workplace impairment, and weight efficacy can be seen in Table 3. Eating food brought in by coworkers (WQ) was significantly negatively correlated with WELQ-Negative Emotions, WELQ-Availability, and WELQ Social Pressure. Unplanned eating was significantly positively correlated with the WSAS. Buying food when already brought from home (WQ) was significantly positively correlated with EDE-Global, EDE-Shape Concern, EDE-Weight Concern and the WSAS. Cost of food as a barrier to healthy eating (WPEF) was significantly positively correlated with the WSAS. Stress resulting in eating larger amounts of food (WPEF) was significantly positively correlated with the WSAS and significantly negatively correlated with all WELQ scales. Stress resulting in eating larger amounts of junk food (WPEF)
was significantly negatively correlated with WELQ-
Negative Emotions. Coworkers influencing eating larger
amounts of food (WPEF) was significantly negatively cor-
related with BMI, WELQ-Availability and WELQ-Social
Pressure and positively with EDE-Eating Concern.

Body mass index was investigated as a potential mod-
erator of the relationships among variables. Overall, BMI
was unrelated to the workplace eating outcomes. Only 1
of the 10 examined items was significantly correlated with
BMI. Therefore, no further analyses were conducted.

### Discussion

This study examined eating behaviours in the workplace
in a sample of individuals with overweight or obesity, both
with and without BED. Results support the theory that the
workplace is an important component of the obesogenic
environment. Eating behaviours were influenced by
workplace factors in the social, emotional, and practical
domains. In comparison with those without BED, individ-
uals with BED were significantly more likely to buy lunch
at work even when they already brought food from home.
Coworker behaviours, consumption of unplanned food,
time constraints, and participants’ stress appeared to be
the most significant barriers to healthy workplace eating
for participants with and without BED. Finally, lower
weight-related self-efficacy and higher work and social
impairment due to binge eating were associated with
unhealthy eating behaviours at work.

While individuals with BED reported buying lunch (even
when they brought food from home) twice weekly, partic-
ipants with excess weight but no BED still reported pur-
chasing such food daily. This recurrent pattern is
important for those who are seeking to lose weight be-
cause a long-term, consistent pattern of purchasing food
away from home may lead to increased intake of calorie-
dense/less nutrient-rich food, which is typical for foods
prepared outside the home (35). Individuals with BED also
reported higher impairments in work and social settings
due to binge eating than those without BED; this is not
surprising given the fact that functional impairment due
to binge eating is part of the diagnostic criteria for BED.
While individuals with BED had significantly higher aver-
age BMIs than individuals without BED, BMI generally
was unrelated to workplace eating behaviours. Perhaps
the lack of significant correlations is due to ceiling effects
or restricted range as all participants had a BMI over
25 kg/m².

There were no other significant differences between
the participants with and without BED on any of the
other workplace eating behaviours. This lack of more
widespread differences in workplace eating may be
because BED often involves eating alone (along with
embarrassment, guilt and shame about amount of food
eaten), and workplace eating may be more social in
nature (36,37). Secretive eating behaviour was not
assessed in this study, however, so it is unknown if this
factor accounts for the lack of differences. Additionally,
the study included participants with both overweight
and obesity who were seeking weight-loss treatment.
Individuals with obesity, as compared with those without,
tend to experience lower eating-related self-efficacy in all
domains (38); therefore, this influence may have obscured
the relationship between BED and unhealthy eating
behaviours.

The sample reported that coworkers brought food to
the office an average of 1.62 times per week, but there
was a great deal of variability, ranging from 0 to 5 times
### Table 3: Pearson product–moment and Kendall’s Tau $b$ correlation coefficients

| Workplace Questionnaire | BMI  | BDI  | EDE-global | EDE-restraint | EDE-eating concern | EDE-shape concern | EDE-weight concern | WSAS total | WELQ-negative emotions | WELQ-availability | WELQ-social pressure | WELQ-physical discomfort | WELQ-positive activities |
|-------------------------|------|------|------------|---------------|-------------------|------------------|-------------------|------------|------------------------|-----------------|---------------------|----------------------|------------------------|
| On average, how many    | -0.03 | 0.14 | 0.02       | -0.03         | -0.05             | 0.12             | 0.01              | 0.09       | -0.27*                 | -0.25*          | -0.26*               | -0.07                | -0.07                  |
| times a week (can be    |      |      |            |               |                   |                  |                   |            |                        |                 |                     |                      |                        |
| more than once a day)   | $p = 0.80$ | $p = 0.25$ | $p = 0.86$ | $p = 0.80$    | $p = 0.67$        | $p = 0.36$       | $p = 0.94$        | $p = 0.47$ | $p = 0.03$             | $p = 0.04$       | $p = 0.04$            | $p = 0.58$            | $p = 0.21$             |
| do you eat this food?   |      |      |            |               |                   |                  |                   |            |                        |                 |                     |                      |                        |
| On average, how many    | 0.09  | 0.04 | 0.08       | -0.12          | 0.11              | 0.11             | 0.09              | 0.27*      | -0.15                  | -0.13            | -0.14                | -0.16                | -0.14                  |
| times a week (can be    |      |      |            |               |                   |                  |                   |            |                        |                 |                     |                      |                        |
| more than once a day)   | $p = 0.47$ | $p = 0.72$ | $p = 0.54$ | $p = 0.35$    | $p = 0.37$        | $p = 0.35$       | $p = 0.47$        | $p = 0.03$ | $p = 0.21$             | $p = 0.27$       | $p = 0.25$            | $p = 0.20$            | $p = 0.27$             |
| do you eat food at work |      |      |            |               |                   |                  |                   |            |                        |                 |                     |                      |                        |
| that was unplanned?     |      |      |            |               |                   |                  |                   |            |                        |                 |                     |                      |                        |
| On average how many     | 0.09  | 0.14 | 0.28*      | 0.14           | 0.17              | 0.29*            | 0.26*             | 0.39**     | 0.04                   | -0.01            | -0.05                | -0.03                | -0.18                  |
| times a week do you     |      |      |            |               |                   |                  |                   |            |                        |                 |                     |                      |                        |
| buy food even when a    |      |      |            |               |                   |                  |                   |            |                        |                 |                     |                      |                        |
| meal was brought from   |      |      |            |               |                   |                  |                   |            |                        |                 |                     |                      |                        |
| home?                   |      |      |            |               |                   |                  |                   |            |                        |                 |                     |                      |                        |
| WPEF*                   |      |      |            |               |                   |                  |                   |            |                        |                 |                     |                      |                        |
| Do you feel that time   | 0.11  | 0.03 | -0.09      | -0.04          | -0.10             | -0.05            | -0.06             | 0.01       | -0.04                  | 0.09             | -0.04                | -0.02                | 0.06                   |
| constraints at your     |      |      |            |               |                   |                  |                   |            |                        |                 |                     |                      |                        |
| workplace prevent you   |      |      |            |               |                   |                  |                   |            |                        |                 |                     |                      |                        |
| from eating healthy?    |      |      |            |               |                   |                  |                   |            |                        |                 |                     |                      |                        |
| Cost of food prevents   | 0.05  | -0.02 | 0.08       | -0.07          | 0.15              | 0.14             | 0.05              | 0.22*      | -0.05                  | -0.11            | -0.09                | -0.05                | -0.16                  |
| healthy eating          |      |      |            |               |                   |                  |                   |            |                        |                 |                     |                      |                        |
| Quality of food prevents| -0.12 | -0.08 | 0.02       | -0.08          | 0.04              | 0.04             | 0.04              | 0.04       | 0.06                   | 0.07             | 0.16                 | 0.08                  | 0.16                   |
| healthy eating          |      |      |            |               |                   |                  |                   |            |                        |                 |                     |                      |                        |
| Stress causes           | 0.06  | 0.18  | 0.12       | -0.05          | 0.18              | 0.14             | 0.13              | 0.23*      | -0.29**                | -0.35**          | -0.22*               | -0.20*                | -0.35**                |
| consumption larger      |      |      |            |               |                   |                  |                   |            |                        |                 |                     |                      |                        |
| amounts of food         |      |      |            |               |                   |                  |                   |            |                        |                 |                     |                      |                        |
| Stress causes           | -0.18 | 0.05  | -0.01      | -0.07          | 0.15              | 0.01             | 0.02              | -0.26**    | -0.15                  | -0.12            | -0.15                | -0.14                | -0.14                  |
| consumption of more      |      |      |            |               |                   |                  |                   |            |                        |                 |                     |                      |                        |
| junk food               |      |      |            |               |                   |                  |                   |            |                        |                 |                     |                      |                        |
| Coworkers influence     | -0.26** | 0.05 | 0.14       | 0.06           | 0.24*             | 0.07             | 0.18              | 0.07       | -0.08                  | -0.20**          | -0.28**              | -0.03                | 0.01                   |
| consumption of larger   |      |      |            |               |                   |                  |                   |            |                        |                 |                     |                      |                        |
| amounts of food         |      |      |            |               |                   |                  |                   |            |                        |                 |                     |                      |                        |
| Coworkers influence     | 0.16  | -0.12 | 0.10       | 0.05           | 0.05              | 0.08             | 0.13              | -0.05      | -0.08                  | -0.06            | -0.10                | -0.01                | 0.004                  |
| consumption of more      |      |      |            |               |                   |                  |                   |            |                        |                 |                     |                      |                        |
| junk food               |      |      |            |               |                   |                  |                   |            |                        |                 |                     |                      |                        |

*Pearson’s $r$ was used for all correlations except for the items of the WPEF for which Kendall’s Tau $b$ was used.

**Correlation is significant at the 0.01 level (two-tailed).

*Correlation is significant at the 0.05 level (two-tailed).

BMI, body mass index; BDI, Beck Depression Inventory; EDE, Disorder Examination; WSAS, Work and Social Adjustment Scale; WELQ, Weight Efficacy Lifestyle Questionnaire; WPEF, Worker’s Perception of Environmental Factors.
weekly. Participants more often ate the food brought by coworkers, with a range of 0 to 8 times weekly. Individuals who were exposed to food brought by coworkers consumed these foods most of the time. Taken by itself, this continual exposure to food creates concern for unhealthy eating behaviours. The sample also reported eating unplanned foods with an average of 2.43 times per week (range of 0 to 20 times per week). When magnified over a 48-week work year, this frequent unplanned eating can have a significant impact on individuals' weight and health, particularly at workplaces that may have food available more frequently. Individuals with lower self-efficacy in response to social pressure, availability of food, and negative emotions were the most likely to eat more food in response to coworkers, including the food that coworkers brought to work. Furthermore, poorer work and social adjustment (due to binge eating) were related to purchasing food even when meals were already brought to work, suggesting that the risks of poorer eating may be compounded when personal factors interact with workplace environmental factors and may be greater for those who binge eat.

In addition to unplanned eating, participants reported that coworkers influenced them to eat more junk food, but not more food in general, and existing literature demonstrating that intake increases in the presence of others (39–41). It is possible that the overall amount of food eaten when brought in by coworkers is naturally limited by social norms (i.e. sharing and ensuring there is enough for everyone), which may not be present in other social situations with large numbers of people (e.g. ordering at a restaurant or a party). Personal factors may also impact this finding. Coworker influence to eat more food was particularly strong for those with low eating self-efficacy in situations where food is highly available and in situations where they perceive strong social influence; therefore, there may be a subset of individuals at risk for eating more food under these circumstances.

Few to no participants reported their coworkers influenced them to eat healthier or to consume less food. It is possible that the unplanned foods, including those brought in by coworkers, are more likely to be unhealthy food, although this was not measured directly. Research shows that the macronutrient content of foods eaten in social settings tends towards foods with more fat and protein (42).

As hypothesized, stress in the workplace was related to eating both more food in general and more junk food specifically. Additionally, participants with low weight self-efficacy were more likely to report eating in response to stress, which makes sense in light of past research showing that individuals with higher levels of stress or work-related burnout tend to eat less intuitively and with less control (8,9). With respect to work performance, higher levels of self-rated work impairment due to binge eating were also related to eating in response to stress. Because this study used cross-sectional data, it is difficult to determine the direction of these relationships; therefore, the precise causality cannot be ascertained from this research. These factors are important to examine in future research.

In addition to the opportunities to eat unplanned foods and the impact of stress, several practical factors were identified as barriers to healthy eating. Time constraints in the workplace were the biggest practical barrier to healthy eating, identified by about one-third of the participants as a barrier, which is consistent with other research indicating time restrictions as a barrier to healthy eating at work (43,44). Quality of food available and cost of food also were identified by a subset of the participants as barriers, consistent with research indicating that employees desire inexpensive, healthy food options at work to meet their nutritional goals (45).

This study had several limitations. First, the sample size was small, and less than a third of the participants met criteria for BED, therefore, the findings need to be interpreted with caution. This study utilized cross-sectional data, which limits the ability to interpret the data. Additionally, the sample itself may not generalize to the larger population of individuals with overweight/obesity and BED because the study participants were primarily women, Caucasian, educated and treatment seeking.

Despite these limitations, the study’s findings are relevant for intervening on both the public health and individual levels. More workplaces may wish to consider broad-based empirically supported health promoting interventions (7,46–50). Coworker behaviour and work stress influenced eating behaviour negatively, and this was particularly true for individuals with low weight-related self-efficacy and greater work impairment due to binge eating. Together, these findings suggest that interventions designed to target self-efficacy in the face of stress and social influence may help individuals make healthier choices at work. Furthermore, these findings support the need to explicitly address workplace eating in treatment for BED and for interventions for weight management in general. Teaching stress management that includes strategies to help balance work responsibility with the time it takes to choose healthy food options could also be beneficial. For example, individuals who underwent guided self-help cognitive-behavioural therapy for recurrent binge eating, as compared with those who received treatment as usual, took fewer days off work for reasons related to eating disorder impairment (51).

There are several ways in which future research may expand upon the present study. A larger and more demographically diverse sample size would increase power and generalizability. A larger subsample of participants
with BED would also increase power for comparison analyses. Validation studies of workplace eating measures are needed. Assessment of secretive eating, estimates of caloric consumption and more details regarding the nature of the unplanned food consumed would also shed light on the specifics of workplace eating behaviours. Repeated measures may also allow for more interpretation of directionality between work impairment and stress-related eating. As BMI appeared mostly unrelated to work variables in this study, further examination of potential moderators may elucidate the interaction between BED and eating at work.

Conclusions

Since people spend much of their time at work, understanding workplace influences on eating behaviour is essential for the treatment of overweight/obesity and BED. The present results raise several areas that may be targeted in weight-loss treatment to increase patients’ success such as responding to unplanned foods in the workplace, resisting coworkers’ influence, managing time and coping with work-related stress. In particular, individuals with impairment related to binge eating may be most vulnerable to eating unplanned foods, clinicians may want to address such experiences directly in treatment.

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Conflicts of interest

The authors have no conflicts to disclose.

Contributors

All authors contributed equally to the literature review and manuscript preparation.

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