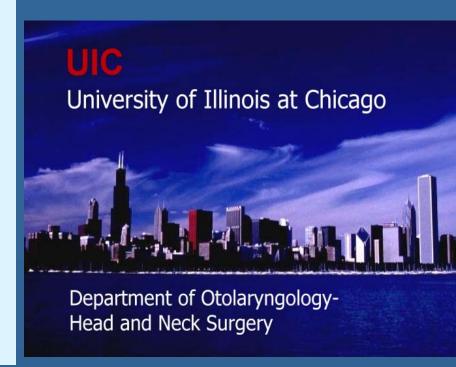# Botulinum Toxin A Can Positively Impact First Impressions

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ABSTRACT

We wished to determine if treatment with Botox® (botulinum toxin A/BTxnA) would improve first impression.
Methods Women received BTxnA in the forehead. Photos were taken prior to, and 1 week after, final BTxnA injection in smiling and relaxed poses. Evaluators completed a survey rating first impression on various measures of success for each photo.
Results No differences were seen for social skills, financial, or relationship success scales. Significant decrease in first impression scores between treatment photos was seen for academic performance and occupational success. However, analysis of between-subject effects found that 'smile/relax' accounted for the decreased score in both scales. Significant increases in first impression scores were seen for the dating success, attractiveness and athletic success scales where 'smile/relax' and BTxnA contributed significantly to the improved scores.
Conclusions BTxnA improved first impression scores for dating success, attractiveness and athletic success scales. Academic performance and occupational success scores were not affected by BTxnA when the 'smile/relax' variable was included. The 'smile/relax' variable was a more important predictor for academic performance and occupational success scores.

INTRODUCTION

The perception of appearance triggers a series of manners, opinions, and attitudes that together affect how someone may be judged or treated. Previous work has demonstrated that first impression is improved by facial cosmetic surgery[5]. However, one may pose the question: what influence do non-surgical enhancements have on first impression? By using Botox® Cosmetic to reduce facial rhytids in the forehead and crow's feet areas the authors pose the question: what aspects of the physical personality are altered when treating fine lines and wrinkles with BTxnA injections? The aim of this study is to compare pretreatment first impression ratings against post treatment first impression ratings. In addition, investigators wished to determine if smiling had an effect on first impression ratings.

METHODS & MATERIALS

Twenty women who had not received BTxnA in 12 months were selected to receive BTxnA therapy to the forehead and crow's feet area. Subjects received an initial treatment and an additional treatment three months later. Of the 20 women recruited and enrolled, 17 women completed the two treatments of BTxnA. Subjects received an average of 47 units of BTxnA on initial treatment. The average dose for the second treatment at 90 days was 36 unit. Standardized frontal and lateral view photographs were taken. Photos were taken prior to receiving BTxnA and approximately one week after receiving the final administration of BTxnA. Photos were also taken in the smiling and relaxed positions at both time points. Photos of subjects were divided into four books with each subject represented in each book only one time. Each book contained 17 photos.

A survey was developed based on a previous survey used in an earlier first impression study evaluating defined categories of perception[5]. The questionnaire included eight Likert-type scales. These scales rated 1) social skills, 2) academic performance, 3) dating success, 4) occupational success, 5) attractiveness, 6) financial success, 7) relationship success, and 8) athletic success. Evaluators did not have specific training in dermatology, plastic surgery or the use of BTxnA nor did they know the subjects of the photos. Evaluators were blinded to treatment of BTxnA. They were only able to view each subject's photo once as it was represented in the book only once. This also prohibited evaluators from comparing "smile" to "no smile" photos. Investigators were able to enlist 307 responders. Each evaluator viewed 17 photos and completed a survey for each photo with 8 subscales. Out of a possible 5,219 observations 2,312 were eliminated for incomplete data and the final number of observations was 2,907.

Data Analysis

Data was loaded into Microsoft Excel® spreadsheets and exported into SPSS 15.0 (Chicago, IL) for analysis. For every scale a univariate analysis of variance (ANOVA) was performed on the responses to evaluate the differences in mean between scores for pre and post treatment observations. This method demonstrated when the difference between means was statistically significant. Subsequently a variable for 'smile/relax' was added to the analysis and a two-way ANOVA provided the significance levels for that and the treatment effect.

Figure One: Photos taken before and after BTxnA

Figure Two: Photos taken with and without smile.

RESULTS

Univariate analysis of variance was performed on responses to evaluate the differences of before and after treatments in the mean scores for each scale and results are presented in Table 1. First impression of responders on the academic performance and occupational success scales demonstrated a significantly lower rating after treatment (the differences were 0.08 and 0.11, respectively).

The results of adding a 'smile/relax' variable to the analysis to control for how differences between two states might be perceived by the evaluators is presented in Table 2. When statistical tests of between-subjects effects were performed using ANOVA, it was found that much of the decrease in the academic and occupational success scores were explained by the 'smile/relax' variable. When 'smile/relax' was added to the model, the BTxnA treatment was no longer significant in predicting the academic performance or occupational success scores. First impression of responders on the dating success, attractiveness and athletic success scales had a significantly increased rating after treatment (0.13, 0.13, and 0.23, respectively). When tests of between-subjects effects were performed including the 'smile/relax' variable, the BTxnA treatment variable was again significant and continued to be significant in predicting higher scores in these areas.

TABLE 1. Difference between Means of "Before" and "After" Botulinum Toxin A Treatment

	Mean			
	Before BTxnA	After BTxnA	Difference	Significance
Social skills	5.90	5.84	NS	.293
Academic performance	5.86	5.78	.08	.068**
Date success	5.17	5.30	.13	.014*
Occupational success	6.08	5.97	.11	.013*
Attractiveness	4.94	5.07	.13	.030*
Financial success	5.67	5.61	NS	.230
Relationship success	5.68	5.68	NS	.967
Athletic success	5.15	5.38	.23	.000**

*Significant at 5% level.
**Significant at 1% level.

TABLE 2. Results of Adding 'Smile/Relax' Variable

	Mean Relax	Mean Smile	BTxnA Significance	Smile/Relax Significance
Social skills	5.23	6.79	NS	NS
Academic performance	5.63	6.11	.165	.000*
Date success	5.75	5.23	.001*	.000*
Occupational success	5.76	6.42	.059	.000*
Attractiveness	4.68	5.46	.005*	.000*
Financial success	5.47	5.89	NS	NS
Relationship success	5.26	6.29	NS	NS
Athletic success	4.97	5.67	.000*	.000*

*Significant at 5% level.

CONCLUSIONS

Investigators found that the evaluators' first impression of subjects receiving BTxnA treatment changed significantly in the scales of academic performance, occupational success, attractiveness, dating success, and athletic success. However, first impression scores for social skills, relationship success, and financial success did not change significantly. The precise demographics of the responders were not tracked. The mechanism of change in first impression not only depends on the background of the evaluator, but also on how inviting the person being judged portrays herself. Alterations in facial expression may affect first impression. Intentional obvious changes such as an inviting smile or subtle unintentional changes in facial expression due to increased self-confidence may have a profound impact on first impression. This study was designed to control for the impact of an obvious change in expression such as a smile. The study found that of the first impression categories that had changed significantly post-treatment, a smile or relaxed facial expression, also contributed to that change in the categories of academic performance, dating success, occupational success, attractiveness and athletic success.

In scales measured, the pre and post treatment scores for first impression improved. It is difficult to assign a cause and effect due to the multiple variables such as evaluator population bias and subject differences. Whether due to increased self-confidence, smiling, or structural changes from BTxnA, this study demonstrates that first impression of evaluators is affected in specific scales of the physical personality. It is uncertain if increased self-confidence led to a more inviting look. Or perhaps it was it strictly BTxnA that altered the contours of the face improving physical appearance or a synergistic effect of all these variables. Whatever the relationship, this study took the first step in showing that a statistically significant change exists in first impression in the categories of academic performance, dating success, occupational success, attractiveness, and athletic success.

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