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**Investigation of New Zealand  
Sauvignon Blanc Wine  
Using Trained Sensory Panels**

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# ABSTRACT

A core tool of sensory science is the use of trained descriptive panels. This research describes an investigation into the role of motivation in the performance of trained panels and the use of a trained panel to develop a better understanding of the perception of Sauvignon blanc wines.

Substantial investment in time and money is directed towards ensuring trained panels perform optimally. Having selected a panel, the panel leader needs to ensure that panellists provide accurate, reliable data. Panellist motivation is also an important factor to consider. While performance psychology, education and sport science fields have researched motivation extensively, knowledge about panellist motivation within sensory science is limited. However, findings from existing research in these other areas - which suggest an important role for autonomy, competence and relatedness - can be applied to sensory panels in order to increase intrinsic motivation.

The initial part of the research investigated the fundamental factors that affect and influence panellists' motivation and participation. A survey (n=74) revealed that extra income and a general interest in food were the key drivers in inspiring people to become panellists, whilst enjoyment in being a panellist, interest in food, and extra income were key drivers for people to remain panellists. In a second survey, the intrinsic motivation of seven trained panels from four countries (n=108) was assessed. External panels were found to be more intrinsically motivated than internal panels. Experienced panellists had an increased perception of competence, which is a key factor for people to be intrinsically motivated. Understanding motivational frameworks currently used in other research fields and integrating them into existing panel training protocols may enhance and sustain panellists' intrinsic motivation.

A trained panel (n=14) was then used in the second part of the thesis to identify key flavours in Sauvignon blanc wines from Australia, France, New Zealand, Spain, South Africa and USA. Sixteen characteristics were identified and measured, including sweet sweaty passionfruit, capsicum, passionfruit skin/stalk, boxwood/cat's urine, grassy, mineral/flinty, citrus, bourbon, apple lolly/candy, tropical, mint, fresh asparagus, canned asparagus, stonefruit, apple and snowpea. Principal component analysis was used to describe differences between regions and countries.

Sauvignon blanc wines from Marlborough, New Zealand (NZ), were described by tropical and sweet sweaty passionfruit characteristics, while French and South African Sauvignon blanc wines were described as having flinty/mineral and bourbon-like flavors. Chemical analyses of these wines also showed that Marlborough, NZ wines had more methoxypyrazine and thiol compounds. A consumer study (n=109) showed that New Zealanders significantly prefer New Zealand style Sauvignon blanc.

The final part of this research focused on using trained panellists to explore the interactions between volatile and non-volatile wine compounds and their effects on the aroma profile of New Zealand Sauvignon blanc wine. Four volatile aroma compounds that are important in New Zealand Sauvignon blanc wine were studied (isobutyl methoxypyrazine [MIBP], 3-mercaptohexanol [3MH], 3-mercaptohexanol acetate [3MHA], and ethyl decanoate). Each of these four aroma compounds were assessed in combination with three non-volatile polyphenolic compounds commonly found in Sauvignon blanc wine: catechin, caffeic acid and quercetin. Results showed each polyphenol had a unique effect when blended with a specific aroma compound, either suppressing, accentuating, or showing little effect on the perception of the aroma compounds. The perception of MIBP, 3MH, and ethyl decanoate were largely suppressed by the added polyphenols, with a few exceptions. The perception of 3MH was accentuated with the addition of caffeic acid, and the perception of 3MHA was accentuated with the addition of catechin. The interactive effects of aroma compounds with polyphenols likely reflect non-covalent associations in the wine solution that reduce the volatility of the aroma compounds. With an understanding of the interactive effects of volatile and non-volatile compounds in wine, winemakers might optimize the impact of selected volatile compounds by managing polyphenol levels, supporting their efforts to attain desirable wine aroma profiles.

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# Table of Contents

<b>Table of Contents</b> .....	<b>i</b>
<b>Index of Tables</b> .....	<b>iv</b>
<b>Index of Figures</b> .....	<b>vi</b>
<b>CHAPTER 1</b> .....	<b>1</b>
<b>INTRODUCTION</b> .....	<b>1</b>
1.1 Sensory Evaluation .....	1
1.1.1 Trained sensory panel .....	4
1.1.2 Controlling bias .....	5
1.2 Wine Sensory Evaluation .....	8
1.2.1 Sauvignon blanc wine .....	9
1.2.2 New Zealand Sauvignon blanc wine .....	12
1.2.3 Trained panel and descriptive analysis .....	13
1.3 Olfactory System .....	16
1.4 Perception Interactions .....	19
1.4.1 Thresholds .....	19
1.5 Principal Aims.....	21
<b>CHAPTER 2</b> .....	<b>23</b>
<b>EFFECTS AND INFLUENCES OF MOTIVATION ON TRAINED</b>	
<b>PANELLISTS</b> .....	<b>23</b>
2.1 Introduction.....	23
2.2 Materials and Methods .....	26
2.2.1 Survey 1 - Factors that inspire people to become and remain	
panellists.....	26
2.2.2 Survey 2 – Intrinsic motivation survey.....	28
2.3 Results .....	30
2.3.1 Survey 1 - Factors that inspire people to become and remain	
panellists.....	30
2.3.2 Survey 2 – Measurement of panellists’ intrinsic motivation in	
relationship to panel type and panellist’s experience.....	31
2.4 Discussion .....	36
2.4.1 Factors that motivate panellists .....	36
2.4.2 Autonomy.....	36
2.4.3 Competency.....	37
2.4.4 Relatedness.....	39
2.4.5 Panellist recruitment .....	39
2.5 Conclusion.....	40
<b>CHAPTER 3</b> .....	<b>41</b>
<b>NEW ZEALAND SAUVIGNON BLANC FLAVOUR CHARACTERISTICS:</b>	
<b>SENSORY, CHEMICAL AND CONSUMER ASPECTS</b> .....	<b>41</b>
3.1 Introduction.....	41
3.1.1 Regionality .....	41
3.1.2 Sauvignon blanc flavour.....	42
3.2 Materials and Methods .....	43
3.2.1 Wine.....	43
3.2.2 Trained panellists.....	46
3.2.3 Consumer panellists .....	46
3.2.4 Facility and evaluation .....	46

3.2.5 Descriptive analysis .....	48
3.2.6 Methoxypyrazines analysis .....	48
3.2.7 Volatile thiols.....	49
3.2.8 Statistical analysis.....	49
3.3 Results .....	50
3.3.1 Sensory analysis.....	50
3.3.2 Aroma chemical analysis .....	55
3.3.3 Relationship between chemical and sensory data .....	57
3.3.4 Consumers .....	60
3.4 Discussion .....	63
3.5 Conclusion.....	68
<b>CHAPTER 4 .....</b>	<b>69</b>
<b>EFFECTS OF POLYPHENOLS ON THE PERCEPTION OF KEY AROMA</b>	
<b>COMPOUNDS FROM SAUVIGNON BLANC WINE<sup>4</sup> .....</b>	<b>69</b>
4.1 Introduction.....	69
4.1.1 Sauvignon blanc key aroma compounds .....	69
4.1.2 Sauvignon blanc polyphenols .....	70
4.1.3 Measurement of perception of Sauvignon blanc aroma compounds	
.....	71
4.2 Materials and Methods .....	71
4.2.1 Sample preparation.....	71
4.2.2 Trained panellists.....	73
4.2.3 Difference testing and data analysis .....	74
4.3 Results and Discussion .....	74
4.3.1 Perception of difference threshold .....	74
4.3.2 Polyphenol effects on MIBP .....	76
4.3.3 Polyphenol effects on 3MH .....	78
4.3.4 Polyphenol effects on 3MHA.....	80
4.3.5 Polyphenol effects on ethyl decanoate .....	81
4.3.6 Volatiles and polyphenols .....	82
4.4 Conclusion.....	85
<b>CHAPTER 5 .....</b>	<b>86</b>
<b>CONCLUSION.....</b>	<b>86</b>
5.1 Motivation of Sensory Panels .....	86
5.2 New Zealand Sauvignon blanc wine .....	89
5.2.1 Sensory.....	89
5.2.2 Consumer .....	92
5.3 Perception interactions .....	94
5.4 New areas of research .....	97
5.5 Concluding remarks .....	98
<b>REFERENCES .....</b>	<b>100</b>
<b>APPENDICES .....</b>	<b>112</b>
Appendix A. NEW ZEALAND SAUVIGNON BLANC WINE WHEEL .....	112
Appendix B. DESCRIPTIVE ANALYSIS OF SAUVIGNON BLANC WINE	
EVALUATION FORM FOR 2004 VINTAGE .....	113
Appendix C. PUBLICATION: EFFECT OF SCREWCAP AND CORK	
CLOSURES ON SO <sub>2</sub> LEVELS AND AROMAS IN SAUVIGNON BLANC	
WINE .....	115
Appendix D. NEW ZEALAND CONSUMER QUESTIONNAIRE FOR 2004	
VINTAGE.....	121

Appendix E. R-INDEX BALLOT.....	134
Appendix F. NEW ZEALAND SAUVIGNON BLANC: WHAT MAKES IT UNIQUE AND DO OREGON USA CONSUMERS LIKE IT? .....	135
Appendix G: PRELIMINARY EXPERIMENT TO CHAPTER 2 .....	144
Appendix H: SAUVIGNON BLANC TRAINED PANEL'S THRESHOLD ..	153
Appendix I: DATA PRESENTED AT WINE SCIENCE REVIEW OF THE NEW ZEALAND SAUVIGNON BLANC PROGRAMME (OCTOBER 30 - NOV 1, 2007) SOCIETY OF SENSORY PROFESSIONAL PRESENTATION OF APPLYING THE RESEARCH FROM THIS THESIS BY ANOTHER SENSORY PROFESSIONAL.....	154
Appendix J: PUBLICATION OF CHAPTER 2.....	161
Appendix K: PUBLICATION OF CHAPTER 3.....	170
Appendix L: PUBLICATION OF CHAPTER 4.....	182
Appendix M: PUBLICATIONS AND CONFERENCES RESULTING FROM THIS THESIS .....	192

## Index of Tables

Table 1.1 Detection thresholds of thiols and methoxypyrazines in water found in the literature (ng/L)	11
Table 2.1. Details about each panel used in Survey 1 and 2.	27
Table 2.2. Factors that trained panellists (n=74) were asked to rate in order of importance as to what inspired them to become a panellist and what inspires them to remain a panellist.	27
Table 2.3. Survey 2 modified Intrinsic Motivation Inventory Survey (McAuley et al., 1989) completed by trained panellists (n=108).	29
Table 2.4. Factor analysis (using varimax rotation) of modified Intrinsic Motivation Inventory Survey from seven different trained sensory panels (n = 108).	32
Table 2.5. Sensory panels' mean scores and <i>P</i> values from responses to Survey 2 -External vs. internal panel (n=108).	33
Table 2.6. Sensory panels' mean scores and <i>P</i> values from responses to Survey 2 - Length of time serving as panellists (years) (n=108).	35
Table 3.1. Number of wines analysed by descriptive analysis in each region (n=52).	45
Table 3.2. Sauvignon blanc sensory reference standards used in trained panel evaluations.	47
Table 3.3. Sensory attribute means in Sauvignon blanc wines (n=52) sampled from different regions.	51
Table 3.4. Levels of MIBP, MIPP, 3MHA and 3MH in Sauvignon blanc wines (n=51) sampled from different regions.	56
Table 3.5. Coefficient of determinations of 3MHA, 3MH and MIBP and sensory attributes of Sauvignon blanc wines.	58

<b>Table 3.6. Demographic information from the New Zealand wine consumers (n=109).</b>	<b>61</b>
<b>Table 3.7. Single factor analysis of variance of New Zealand consumers' overall liking scores (n=109) for eight Sauvignon blanc wines (<math>P&lt;0.05</math>).</b>	<b>62</b>
<b>Table 4.1. Effects of polyphenols (catechin, caffeic acid, and quercetin plus putative degradation products) on the perception of MIBP using <i>R</i>-Index difference testing</b>	<b>77</b>
<b>Table 4.2. Effects of polyphenols (catechin, caffeic acid, and quercetin plus putative degradation products) on the perception of 3MH using <i>R</i>-Index difference testing</b>	<b>79</b>
<b>Table 4.3. Effects of polyphenols (catechin, caffeic acid, and quercetin plus putative degradation products) on the perception of 3MHA using <i>R</i>-Index difference testing.</b>	<b>81</b>
<b>Table 4.4. Effects of polyphenols (catechin, caffeic acid, and quercetin plus putative degradation products) on the perception of ethyl decanoate using <i>R</i>-Index difference testing.</b>	<b>82</b>
<b>Table G.1. Probability of correct answers according to <i>R</i>-index analysis for the detection threshold testing of MIBP for twelve panellists.</b>	<b>148</b>

## Index of Figures

Figure 1.1 Three methoxypyrazines of wines: 2-methoxy-3-isobutylpyrazine (MIBP), 2-methoxy-3-isopropylpyrazine (MIPP) and 2-methoxy-3-sec-butylpyrazine (MSBP). .....	9
Figure 1.2 Volatile thiols in Sauvignon blanc wine; (a) 4-mercapto-4-methylpentan-2-one (4MMP), (b) 4-mercapto-4-methylpentan-2-ol (4MMPOH), (c) 3-mercapto-3-methylbutan-1-ol (3MMB), (d) 3-mercaptohexan-1-ol (3MH), (e) 3-mercaptohexyl acetate (3MHA).....	11
Figure 1.3 The eleven wine growing regions of New Zealand. ....	12
Figure 2.1. Factors that inspire people to become and remain panellists (n=74). .....	30
Figure 3.1a & 3.1b. Principal component analysis of sensory data of Sauvignon blanc wines from six countries. (3.1a) PC1 v. PC2. (3.1b) PC1 v. PC3.....	53
Figure 3.2. Canonical variate analysis (CVA) of sensory data of Sauvignon blanc wines from six countries.....	54
Figure 3.3. Partial least square regression of sensory attributes and chemical flavour compounds of Sauvignon blanc wines.....	59
Figure 3.4. External preference map of New Zealand consumers (n=109) and the Sauvignon blanc wine (n=8) sensory attributes. ....	63
Figure G.1. Twelve panellist rated mean scores (n=10 sessions) for their perceived confidence before and after each of the ten training session. ....	147
Figure G.2. Comparison of difference in sensory panellists' perceived confidence scores before and after sessions with negative and positive cues from the panel leader.....	149

