Appendix 1. Study objectives and main results/conclusions

Authors	Year	Aim and main results/conclusions	Statistical method
Chay SH et al.[5]	2007	"To evaluate the effects of **different surface treatments** and **aging** on the bond strength of orthodontic brackets bonded to provisional materials."	Three-way ANOVA and Tukey HDS *post hoc*; Kruskal-Wallis and Mann-Whitney CI 95%
		bond strength seems to be influenced by surface treatment. type of surface and time	
Rambhia S et al.[4]	2009	"To test the hypothesis that there is no difference in the shear bond strength of brackets bonded to provisional crown materials using **two adhesive agents**."	Three-way ANOVA and Tukey HDS *post hoc* CI 95%
		bond failure was of the adhesive type; bond strenght may be not influenced by the type of brackets or the adhesives; PEMA based acrylic had the worst performance compared to the other materials	
Maryanchik I et al.[8]	2010	"To compare the shear bond strengths of orthodontic brackets bonded to **various commonly used esthetic pontic materials**."	Two-way ANOVA and Tukey HDS *post hoc*; Kruskal-Wallis CI 95%
		bond strength may be affected by the pontic material and time but a significant interaction made results uninterpretable	
Masioli DLC et al.[12]	2011	"To evaluate the influence of the **surface treatment** of acrylic resins on the shear bond strength of composite resin bonded brackets."	Mann-Whitney –
		silane did not enhance bond strenght; greater roughness contributes to increase the bond strength	
de Almeida JX et al.[9]	2013	"To assess the adhesive resistance of metallic brackets bonded to temporary crowns made of acrylic resin after **different surface treatments**."	Two-way ANOVA and Games-Howell; Kruskal-Wallis CI 95%
		bond strength seems to be influenced by surface treatment and type of adhesive	
Al Jabbari et al.[2]	2014	"To evaluate the combined effects of **material type**. **surface treatment**. and **thermocycling** on the bond strength of orthodontic brackets to materials used for the fabrication of provisional crowns".	One-way ANOVA and Tukey HDS *post hoc* CI 95%
		bond strength seems to be influenced by surface treatment. type of surface and aging; sandblasting performed better compared to the other materials	
Dias FM et al.[10]	2015	"To compare shear bond strength of different direct **bonding techniques** of orthodontic brackets to acrylic resin surfaces."	ANOVA and Tukey test; Kruskal-Wallis CI 95%
		bond strength seems to be influenced by adhesive type – CAAR showed better results than light-cured composite resin. The surface treatment may influence the bond strenght depeding on adhesive type – diamond bur only increased shear bond strength on composite resin group	
Goymen M et al.[7]	2015	"Evaluate the effect of **different temporary crown materials** and **surface roughening methods** on the shear bond strength of orthodontic brackets."	One-way ANOVA and Tukey HDS *post hoc* CI 95%
		bond strength seems to be influenced by surface treatment – Er:YAG laser surface pre-treatment increased significantly the bond strength – but not by the type of surface	
Soon HI et al.[11]	2015	"To compare the shear bond strengths of five **different adhesive techniques** for attaching metal orthodontic brackets onto acrylic pontics."	Two-way ANOVA and Bonferroni *post hoc* CI 95%
		bond strength seems to be influenced by adhesive type – cyanoacrylate adhesive performed better then composite resin and surface treatment – sandblasted and undercut groups showed significantly higher bond strength. NSD were found for fadigue tests	
Correia AMO et al.[13]	2016	"To evaluate the performance of **cyanoacrylate associated with orthodontic materials** commonly used for the fixation of metallic braces on temporary restorations of acrylic resin."	One-way ANOVA and Tukey HDS *post hoc* CI 95%
		bond strength seems to be influenced positively when associating cyanoacrylate to monomer of methyl methacrylate	

NSD. no significant diferences; CAAR. chemically activated acrylic resin

Appendix 2. Data exposed chronologically

Authors	Year	Groups	N total	N per group	Strenght	Test	Crosshead speed	Brackets material and area (mm^2)		Thermo cycling fatigue tests	ARI	SEM	Storage solution. temperature and time
Chay SH et al.[5]	2007	12	240	20	MPA	SBS	0.5mm/min	metal	10.89	–	Artun and Bergland (1984)	no	distilled H_2O 35ºC 1w or 1m
Rambhia S et al.[4]	2009	4	160	40	MPA	SBS	5mm/min	metal and ceramic	9.03 and 11.29	–	Failure Mode	no	distilled H_2O 37ºC 24h
Maryanchik I et al.[8]	2010	3	90	30	MPA	SBS	1mm/min	metal	9.48	–	Artun and Bergland (1984)	no	distilled H_2O 37ºC 24h
Masioli DLC et al.[12]	2011	14	140	10	MPA	SBS	0.5mm/min	n.d.a	n.d.a	–	no	yes	distilled H_2O 37ºC 24h
de Almeida JX et al.[9]	2013	6	180	30	MPA	SBS	0.5mm/min	metal	n.d.a	–	Artun and Bergland (1984)	no	distilled H_2O 37ºC 24h
Al Jabbari et al.[2]	2014	4	240	60	MPA	SBS	1mm/min	metal	n.d.a	500cycles:5ºC(30s)-5s-55ºC(30s)	Artun and Bergland (1984)	no	distilled H_2O 37ºC 24h
Dias FM et al.[10]	2015	4	64	16	MPA	SBS	0.5mm/min	metal	14.79	–	Artun and Bergland (1984)	no	distilled H_2O 37ºC 24h
Goymen M et al.[7]	2015	15	300	20	MPA	SBS	1mm/min	metal	n.d.a	500cycles:5ºC(30s)-5s-55ºC(30s)	no	yes	distilled H_2O 37ºC 24h
Soon HI et al.[11]	2015	5	200	40	MPA	SBS	1mm/min	n.d.a	n.d.a	500cycles	no	no	n.d.a. / room temperature 24h
Correia AMO et al.[13]	2016	4	40	10	MPA	SBS	0.5mm/min	metal	12.89	–	no	no	n.d.a

n.d.a. no data available

Appendix 3. Bond strenght in megapascals (Mpa)

Authors (year)	Surface treatment	bis-GMA / bis-Acrylic	PMMA	PEMA	Pre-fabricated teeth	MMA	UMA
		Strength (standard desviation)	Strength (standard desviation)	Strength (standard desviation)	Strength (standard desviation)	Strength (standard desviation)	Strength (standard desviation)
Chay SH et al. (2007)[5]	Brush	3.76(0.76)1w XT	12.16(1.48)1w XT	–	–	–	–
		3.70(1.57)1m XT	11.26(2.19)1m XT				
	Pumice	3.87(0.88)1w XT	12.42(2.24)1w XT				
		4.72(1.80)1m XT	9.52(2.11)1m XT				
	Sandblasting Al2O3	3.75(0.08)1w XT	11.06(1.40)1w XT				
		5.53(1.44)1m XT	10.04(0.85)1m XT				
Rambhia S et al. (2009)[4]	–	8.31(1.43)FO	–	2.81(1.33)FO	–	8.52(2.24)FO	–
		7.78 (4.44)OA		5.08(1.49)OA		6.62(2.81)OA	
		9.33(2.02) FO		–		–	
		8.37(2.12)OA					
		8.25 (2.45)FO		**9.32(2.53)FO**	–	**5.40(2.18)FO**	–
		7.10 (1.50)OA		**8.27(2.08)AO**		**7.83(1.80)AO**	
		7.42 (1.73) FO		–		–	
		9.65 (2.35) OA					
Maryanchik I et al. (2010)[8]	Sandpaper disc + Sandblasting Al2O3	6.5(2.6)24h XT	9.5(2.6)24h XT	–	5.3(4.5)24h XT	–	–
		11.3(4.7)7d XT	14.7(7.3)7d XT		5.5(2.1)7d XT		
Masioli DLC et al. (2011)[12]	Sandblasting Al2O3	–	–	–	–	4.23(2.32) XT	–
						3.65(2.48)sil XT	
	Diamond bur					2.69(1.88) XT	
						2.07(1.24)sil XT	
	Hydrofluoric acid 9.6%					2.75(0.86) XT	
						1.47(1.13)sil XT	
	Fosforic acid 37%					2.39(1.34) XT	
						2.94(1.88)sil XT	
	Plastic conditioner					2.97(2.16) XT	
						3.13(1.07)sil XT	
	Monomer					3.66(1.74) XT	
						2.44(1.21)sil XT	
de Almeida JX et al. (2013)[9]	Sandpaper SiC	–	–	–	–	18.04(3.46)D	–
						9.71(2.11)XT	
	Sandblasting Al2O3					22.64(4.04)D	
						11.23(2.75)XT	
	Monomer					22.41(3.95)D	
						9.67(1.95)XT	
Al Jabbari YS et al. (2014)[2]	Sandpaper SiC	10.3XT	3.1XT / 1.7XT	1.3XT		–	–
		9XTatc	0XT atc / 0XT atc	0.8XTatc			
	Pumice	6.4XT	0.6XT / 1.6XT	1.6XT			
		5.6XTatc	0XT atc / 0XT atc	0.8XTatc			
	Sandblasting Al2O3	6.7XT	1.8XT / 9.7XT	6.8XT			
		13.1XTatc	7.9XT atc / 7.5XT atc	5.3XTatc			

Authors (year)	Surface treatment	bis-GMA / bis-Acrylic		PMMA	PEMA	Pre-fabricated teeth	MMA	UMA
		Strength (standard desviation)		Strength (standard desviation)	Strength (standard desviation)	Strength (standard desviation)	Strength (standard desviation)	Strength (standard desviation)
Dias FM et al. (2015)[10]	Pumice and rubber cup	–		12.19(1.58)D	–	–	–	–
				1.38(0.40)XT				
	Diamond bur			12.41(1.96)D				
				4.37(1.14)XT				
Goymen M et al (2015)[7]	Fosforic acid 37%	5.06(1.44)XT	3.68(1.22)XT	4.35(0.89)XT	2.23(0.29)XT	–	–	2.86(0.47)XT
	Sandblasting Al2O3	5.24(1.57)XT	3.89(0.73)XT	4.72(1.38)XT	2.74(0.55)XT			4.06(0.48)XT
	Laser Er:YAG	6.36(1.50)XT	5.43(0.81)XT	4.85(1.31)XT	4.46(0.96)XT			4.26(0.55)XT
Soon HI et al. (2015)[11]	None	–		–	–	4.22(1.15)GG	–	–
						4.37(1.10)GGatc		
						19.82(2.93)CA		
						18.13(2.37)CAatc		
						4.14(1.04)Pan.		
						4.15(1.12)Pan.atc		
	Sandblasting Al2O3					17.18(2.72)GG		
						17.04(2.05)GGatc		
	Undercut window					17.69(2.98)GG		
						17.02(2.33)GGatc		
Correia AMO et al. (2016)[12]	Pumice	–	–	–	–	–	7.76(6.96)D	–
							13.76(4.43)D+CA	
							3.87(4.91)XT	
							4.03(3.56)XT+CA	

Ceramic brackets; After thermocycling (atc); 1week (1w). 1month (1m); 7 days (7d). Acrylic resin MMA (D); TransbondXT (XT); FujiOrtho LC (FO); Ortho Adhesive (OA); Gengloo (GG); Panavia (Pan.); Cyanoacrylate (CA); Silane (sil)